

**A Practical Evaluation of Employee Productivity Using  
a Profesional Data Base**

Raquel Ortega

*Department of Business, University of Zaragoza*

**Abstract.** The objective of this paper is to carry out a practical evaluation of employee productivity in the United States using a the professional data base, namely the ECS Survey on Employee Efficiency (2000/2001) conducted by Watson Wyatt, which includes the responses of 453 organizations covering 1,685,336 employees. To that end, we measure employee productivity of US organizations, differentiated by profit status, industry sector and employee size, using 42 indicators divided into three categories, that is to say, expenses, staffing and turnover ratios. Our findings reveal that new employee strengths will depend upon developing and using the kinds of information and analyzes that can keep workers, educators, employers and employee program administrators abreast or ahead of changing conditions.

**Keywords:** Employee productivity, Professional data base, expenses ratios, staffing ratios and turnover ratios

**JEL Classification:** J24, J44

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**Address:** Raquel Ortega. Departamento de Economía y Dirección de Empresas. Facultad de Ciencias Económicas y Empresariales. Universidad de Zaragoza. Gran Vía, 2. 50005. Zaragoza. Spain. E-mail: [rortega@posta.unizar.es](mailto:rortega@posta.unizar.es)

## **1. Introduction**

Faced with formidable foreign and domestic competition, US firms have pursued many paths in recent years with the aim of reducing costs. By way of example, they have downsized and outsized in an effort to reduce personnel costs, and have applied a policy of mergers and acquisitions in order to achieve increased economies of scale. More particularly, manufacturing organizations have sought to reduce costs and improve competitive advantage by improving quality, reducing lead times, automating operations and a host of other improvements. In this line, employee productivity constitutes a topic whose professional and academic importance has not traditionally reflected a direct relationship with its economic relevance. In fact, only a limited amount of research has been devoted to this subject (Young and Selto, 1991; Fry, 1992; Vergin, 1998) and, indeed, these analyzes suffer from a number of significant weakness. The most important of these is that they have focused their attention on only one or two business ratios, and in this paper we try to remedy this weakness with a complete analysis of employee productivity in the US by using a large number of business ratios. By adopting this more wide-ranging approach, we will hopefully provide a more complete picture of this topic.

More specifically, the central aim of this paper is to carry out a practical evaluation of employee productivity in the United States using a professional data base, namely the ECS Survey on Employee Efficiency (2000/2001) designed and developed by Watson Wyatt, which includes responses of 453 organizations covering 1,685,336 employees. To that end, we measure employee productivity of US organizations, differentiated by profit status, industry sector and employee size, using 42 indicators divided into three categories, that is to say, expenses, staffing and turnover ratios. The Survey includes two types of profit status organizations (profit and non-profit), together with all productive sectors (manufacturing: durable goods manufacturing and non-durable goods manufacturing; non-manufacturing: utilities and energy, retail and wholesale trade, services, health care; and financial services: banking and finance and insurance) and, finally, three types of size classification (sales size: under \$100 million and \$500 million and over; asset size: under \$1 billion and \$1 billion and over; and employee size: under \$100 million and \$500 million and over). After providing a descriptive analysis of the sample, we measure the variable of interest of this paper, namely

employee productivity, quantifying 42 separate measures of people costs and productivity in the form of three categories, i.e., expenses (30), staffing (6) and turnover (6) ratios. All these indicators provide a detailed picture of the current situation of employee productivity in the US economy. On the basis of our results, we can determine whether there are significant differences in US productivity ratios, identifying these differences by factors such as profit status, industry or size of organization.

Several points must be stressed in this introductory section. First, the Survey draws on an extensive sample of organizations with a very representative character. Thus, the sample includes a large number of organizations divided by their profit status, their industry sector and their employee size. Secondly, our statistical information is updated to the past year, 2001. This is as useful as it is attractive for the purpose of an empirical analysis, given that the possible policy implications we derive from our study are based on a realistic picture of the current situation, which should make them more useful for policy-makers in their labor decisions. Finally, the availability of our exhaustive data base allows us to obtain empirical evidence that can be used to draw comparisons between the most relevant type of organizations found in the US economy. This evidence allows us, in turn, to clarify the different industrial policies that government could implement in order to stimulate the specific weaknesses identified by our study.

The rest of the paper is organized as follows. First, we explain the background on employee productivity. We then describe the statistical information and characterize all the ratios, before turning to a consideration of the empirical results. Finally, we close the paper with a summary of the most relevant conclusions.

## **2. Background**

When considering the background to research into employee productivity in organizations, we find that one early line focused on the social-psychological processes, in such a way that the concept of “opportunities” in the labor market became synonymous with that perceived subjectively by employees, rather than with the objective opportunities presented to individuals (Hui, 1988). However, the development of this promising concept did not significantly contribute towards explaining actual employee outcomes (Michaels and Spector, 1982; Hulin *et al.*, 1985). Indeed, the results

obtained were in sharp contrast to aggregate level economic-demographic studies, which were successful in providing consistent and significant evidence of the impact of labor market conditions on employee ratios (Schervish, 1981, 1983; Terborg and Lee, 1984; Steel and Griffeth, 1989). A proposed compromise to this apparent contradiction was suggested by Michaels and Spector (1982), namely to examine the impact of specific rates as a proxy for actual opportunities.

Another interesting line of analysis was that which championed a macro-sociological approach toward determining opportunities. Here, opportunities were not monolithic, but rather differentiated on the basis of differences found in occupational, regional and national labor markets (Hulin *et al.*, 1985; Terborg and Lee, 1984). This perspective further argued for linking perceived opportunities to the “real labor market”, a reference to the specificity’s of the organizational setting and broader labor markets (Price and Mueller, 1981, 1986; Mueller and Price, 1990; Lee *et al.*, 1992).

The underlying basis for this structure was meant to reflect the supply/demand for workers at the occupational, industrial and regional level, as well as other characteristics, such as profit status. Labor market conditions affecting this supply/demand were seen as deriving from several organization-market sources: the growth and development of core and periphery organizations (Lee *et al.*, 1992; Laker, 1991), regional differentiation (Zagorski, 1990), organization size (Benson *et al.*, 1987), and the vulnerability of organizations due to sector affiliation (Diprete, 1989) or status (Werner *et al.*, 2000).

In this context of perceived and objective opportunities, it was argued that perceived opportunities had an indirect rather than direct impact on specific employee ratios (Lee, 1988). Similarly, it was claimed that they did not have a measure of objective certainty about realistic opportunities (Hulin *et al.*, 1985; Michael and Spector, 1982), that there was no clear boundary distinction between perception and objective reality (Griffeth and Horn, 1988), and that there was a lack of sensitivity to organizational-based differences (Griffeth and Horn, 1988). Thus, whilst macro-level analysis could predict employee patterns, perceived opportunities could not, or at least not in the same sense. So, where is the reality?

Organizational or internal firm labor markets provide an important theoretical framework to analyze the productivity of employee ratios. The opportunities reflected in such ratios are restricted to the organization's boundaries and are usually defined as the expenses present in a given firm, or distributed within sections of larger corporations. Such a market links several organizational processes: training, compensation, staffing, etc. (Doeringer and Piore, 1971), although the linking with turnover decisions, measured as turnover rates, are very limited (McKeen and Burke, 1992). From among these processes, currently the most useful is organizational size, which is presented as the key measurement of an organization's internal labor market (Cohen and Pfeffer, 1986). Organizational size acts as a proxy for other organizational features; more specifically, size enhances the development of an internal labor market (Baron, 1984; Baron *et al.* 1986). Organizational size also impacts on turnover ratios (Benson *et al.*, 1987), but primarily through wage levels and expenses ratios (Idson and Feaster, 1990; Garen, 1985). What we can appreciate from all this is the complex interactive effect of size.

In addition, local/regional labor markets reflect the vulnerability of the individual's geographic location to the supply and demand for labor. The outcome of such a trade-off affects the dual economy, as well as opportunities generated by core and periphery organizations (Perrow, 1983; Woodward and McNabb 1982). Such differences prompt unemployment rates or vacancy slots at the occupational, industrial and regional levels in two alternative and interdependent ways. First, local unemployment/vacancy rates may constrain the individual's possibilities of finding an alternative position in the same geographical location, especially when alternative opportunities are restricted in quality and/or quantity (Farrell and Rusbult, 1981). Such constraints were found to affect the employment status of individuals (Schervish, 1981), and to be related to staffing and turnover ratios (Shikiar and Freudenberg, 1982). Secondly, for organizations in isolated areas, in contrast to a location in a core area, the extent of competition is minimized. Hence, the geographical limits may also affect the employee's perception of local/regional labor market resources (Hulin *et al.*, 1985; Griffeth and Hom, 1988), as well as access to these resources by virtue of belonging to a "good" organization (Youngblood *et al.*, 1983).

In this context, we support the arguments of Kirschenbaum and Mano-Negrin (1999), who maintain that perceived job opportunities derive first and foremost from

their objective organizational and labor market sources. Indeed, both theorists and practitioners of internal labor markets postulate that such markets, perceived to be relevant by employees, may be neither “open” nor “competitive” in terms of access, or for the creation of opportunities. Perceived opportunities may be limited to a much narrower set of market paths within the general organization of work (Pfeffer and Cohen, 1983), or even the local and/or broad occupational market (Zargoski, 1990). The business literature argues that the origins of alternative job opportunities are clearly generated within labor markets, but if this line of argument is so clear, then why has such effort been put into examining employee rates at a micro-level based on perceived, more than on objective, opportunities.

A variation on this theme has also been developed, with emphasis being placed on the link between objective opportunities and organizational work attitudes, and with this link affecting cognitive-based perceptions of available opportunities. Objective *versus* perceived opportunities form a major definitional division, which has been adopted by both economists and behavioral scientist. Thus, most of the time the expected pattern of employee rates never appears when we analyze a real and robust sample, because the logic of an objective economic pattern is opposite to the perceived pattern. This is so given that reality can be changed, depending on the external and internal environment. However, what has been lost in these positions are those refined measures which are linked to a common set of factors within the occupational labor market (e.g. internal *versus* external organizational opportunities, sector opportunities, regional opportunities, organization status opportunities, etc...). It therefore makes little sense to artificially distinguish between objectively and subjectively perceived opportunities, as the common basis for both is tied to actual labor market positions generated through various types of market activity (Kirschenbaum, 1991)

### **3. Data and ratios**

The sample includes 453 organizations (Appendix Table A1) initially divided by both geographical region and employee size (Table 1). With respect to the region variable, we can observe that the majority of these organizations are concentrated in the North Central region, 37.1%, whilst the South Central region shows the lowest number,

9.9%. The remaining percentages are North-east, 22.1%, South-east, 15.5%, and West Coast, 15.5%. As regards employee size, the highest percentage of sample organizations appears in the smallest organizations, that is to say, those with under 200 employees, 20.3%, with the next largest percentage appearing in the 2,000 to 4,999 employees category, 18.1%. By contrast, the lowest percentage appears in big organizations, that is to say, the 10,000 to 19,999 employees group, 2.9%.

TABLE 1. Descriptive Analysis of the Sample

| By region                       | North-east | South-east | North Central | South Central | West Coast | United States | % of Responses |  |
|---------------------------------|------------|------------|---------------|---------------|------------|---------------|----------------|--|
| Entire Sample Combined          | 100        | 70         | 168           | 45            | 70         | 453           | 100.0%         |  |
| Profit Status                   |            |            |               |               |            |               |                |  |
| Profit Organizations            | 74         | 43         | 125           | 28            | 50         | 320           | 70.6%          |  |
| Non-profit Organizations        | 26         | 27         | 43            | 17            | 20         | 133           | 29.4%          |  |
| Industry Sector                 |            |            |               |               |            |               |                |  |
| Durable Goods Manufacturing     | 14         | 12         | 34            | 7             | 11         | 78            | 17.2%          |  |
| Non-Durable Goods Manufacturing | 7          | 3          | 20            | 2             | 8          | 40            | 8.8%           |  |
| Utilities and Energy            | 7          | 3          | 5             | 9             | 4          | 28            | 6.2%           |  |
| Retail and Wholesale Trade      | 14         | 6          | 8             | 0             | 8          | 36            | 7.9%           |  |
| Services                        | 27         | 25         | 52            | 18            | 26         | 148           | 32.7%          |  |
| Health Care                     | 11         | 9          | 20            | 8             | 6          | 54            | 11.9%          |  |
| Banking and Finance             | 12         | 10         | 11            | 1             | 2          | 36            | 7.9%           |  |
| Insurance                       | 8          | 2          | 18            | 0             | 5          | 33            | 7.3%           |  |
| Regional Percentages            | 22.1%      | 15.5%      | 37.1%         | 9.9%          | 15.5%      | 100.0%        |                |  |

  

| By employee size                | Under 200 Employees | 200 to 499 Employees | 500 to 999 Employees | 1000 to 1999 Employees | 2000 to 4999 Employees | 5000 to 9999 Employees | 10000 to 19999 Employees | 20000 Employees and Over | % of Responses |
|---------------------------------|---------------------|----------------------|----------------------|------------------------|------------------------|------------------------|--------------------------|--------------------------|----------------|
| Entire Sample Combined          | 92                  | 78                   | 73                   | 57                     | 82                     | 32                     | 13                       | 18                       | 100.0%         |
| Profit Status                   |                     |                      |                      |                        |                        |                        |                          |                          |                |
| Profit Organizations            | 65                  | 56                   | 54                   | 37                     | 55                     | 21                     | 8                        | 16                       | 70.6%          |
| Non-profit Organizations        | 27                  | 22                   | 19                   | 20                     | 27                     | 11                     | 5                        | 2                        | 29.4%          |
| Industry Sector                 |                     |                      |                      |                        |                        |                        |                          |                          |                |
| Durable Goods Manufacturing     | 22                  | 23                   | 12                   | 8                      | 7                      | 2                      | 3                        | 0                        | 17.2%          |
| Non-Durable Goods Manufacturing | 8                   | 9                    | 8                    | 6                      | 5                      | 1                      | 0                        | 2                        | 8.8%           |
| Utilities and Energy            | 4                   | 2                    | 4                    | 7                      | 5                      | 3                      | 0                        | 2                        | 6.2%           |
| Retail and Wholesale Trade      | 3                   | 5                    | 9                    | 4                      | 6                      | 3                      | 1                        | 4                        | 7.9%           |
| Services                        | 40                  | 19                   | 20                   | 13                     | 28                     | 12                     | 6                        | 8                        | 32.7%          |
| Health Care                     | 4                   | 11                   | 9                    | 7                      | 16                     | 4                      | 2                        | 1                        | 11.9%          |
| Banking and Finance             | 10                  | 3                    | 7                    | 6                      | 7                      | 2                      | 0                        | 1                        | 7.9%           |
| Insurance                       | 1                   | 6                    | 4                    | 6                      | 8                      | 5                      | 1                        | 0                        | 7.3%           |
| Region                          |                     |                      |                      |                        |                        |                        |                          |                          |                |
| Northeast                       | 23                  | 17                   | 14                   | 11                     | 21                     | 10                     | 2                        | 2                        | 22.1%          |
| Southeast                       | 7                   | 12                   | 19                   | 11                     | 13                     | 5                      | 1                        | 2                        | 15.5%          |

|                                     |       |       |       |       |       |      |      |      |       |
|-------------------------------------|-------|-------|-------|-------|-------|------|------|------|-------|
| North Central                       | 36    | 33    | 18    | 18    | 33    | 7    | 7    | 11   | 37.1% |
| South Central                       | 6     | 4     | 9     | 8     | 8     | 5    | 2    | 2    | 9.9%  |
| West Coast                          | 20    | 12    | 13    | 9     | 7     | 5    | 1    | 1    | 15.5% |
| Organization Size Group Percentajes | 20.3% | 17.2% | 16.1% | 12.6% | 18.1% | 7.1% | 2.9% | 4.0% |       |

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In addition to the variables of region and organization size, we have also differentiated by two further relevant and illustrative variables, namely the profit status and the industry sector. The first of these allows us to distinguish between profit and non-profit organizations, whilst the second differentiates the industry sector into durable goods manufacturing, non-durable goods manufacturing, utilities and energy, retail and wholesale trade, services, health care, banking and finance and insurance.

With respect to the region variable, 320 of the sample organizations, 70.64%, are profit, whilst the rest, 29.36%, are non-profit. For both profit and non-profit, 39% and 32%, respectively, are concentrated in the North Central region, whereas 8.75% and 12.78%, respectively, appear in the South Central region. The remaining regional percentages also appear according to the figures for the total sample.

As regards the industry sector, we have considered three main categories, that is to say, manufacturing (durable goods manufacturing and non-durable goods manufacturing), non-manufacturing (utilities and energy, retail and wholesale trade, services and health care) and, finally, financial services (banking, finance and insurance). Each of the industrial groups includes the following specific activities: durable goods manufacturing (aerospace and aircraft, building materials, electrical equipment and electronics, electronics and telecommunications equipment, fabricated metal products, high technology, instruments and bio-medical equipment and supplies, machinery, primary metals, primary metals and fabricated metal products, sporting goods and toys, and transportation equipment), non-durable goods manufacturing (bakery grain and confectionery products; chemicals; chemicals, plastics, pharmaceutical and cosmetics; dairy and meat products, food and kindred products; pharmaceutical and cosmetics, publishing; publishing and printed products, rubber and leather products, textiles, and other food products), utilities and energy (energy, petroleum and crude oil, and utilities), retail and wholesale trade (retail trade; wholesale trade -durable; wholesale trade -durable and non durable; wholesale trade -non-durable)



service (computer programming and data processing services; construction; education; engineering and research services; general business services; government and social services; leisure and hospitality services; mining and agriculture, professional and general business services, professional services; real estate, transportation services), health care (hospitals and integrated health care; other health care), banking and finance (banking; financial services) and, finally, insurance (P and C, life and health insurance).

After identifying the main sectors and sub-sectors which make-up the sample, it is interesting to consider which of these present the highest and the lowest sample percentages. Focusing in the region variable, we can note that the sample of durable goods manufacturing is concentrated in the North Central area, 44%, with the lowest figure corresponding to the South Central region, 9%. This is also the case with respect to non-durable goods manufacturing. However, this representative pattern is not repeated in all the sub-sectors. Thus, when considering utilities and energy, we can observe that the sample is concentrated in the South Central area, 32%, with the minimum value appearing in the South-east region, 11%. Attention should also be drawn to the pattern corresponding to the retail and wholesale trade, where the majority of organizations are concentrated in the North-east area, 39%, and where the responses in the South Central region are almost null. With respect to the services and health care sub-sector, the highest participation appears in the North Central area, 35%, whilst the lowest value is in the South Central region, 12%. Finally, as regards the third main sector, financial services, the highest concentration is, as expected, in the North-east region, 33%, whereas the lowest appears in the South Central area, 3%, with this region presenting a null response in the insurance sub-sector.

In relation to the analysis of the sample by employee size, we start differentiating by profit status, thereafter by industry sector and, finally, by region. With respect to profit status, the highest participation is concentrated in the smallest organizations, both profit organizations, with 70.6% and for non-profit organizations, with 29.3%. In the latter case, the participation is the same for these two types of organizations with sizes of between 2,000 and 4,999 employees. The lowest participation appears in the case of for profit organization in the range of 10,000 to 19,999 employees, 61.5%, and for non-profit organizations, 11.1%.

As regards the industry sector in relation to employee size, we identify the maximum and minimum participation in each sector. The highest levels of participation for the service and insurance sector can be found in the smallest organizations, with a participation of 43.47% and 10.86%, respectively. For the next size of organization, the highest participation is concentrated in durable and non-durable goods manufacturing. The maximum participation for those organizations with between 500 and 999 employees is located in the retail and wholesale trade, 12.32%. The utilities and energy sector has its maximum level of participation in organizations with a size of between 1,000 and 1,999 employees. The highest levels of participation for the health care and insurance sectors are concentrated among organizations with between 2,000 and 4,999 employees, 19.5% and 9.75, respectively. Finally, the minimum levels of participation can be found in the largest organizations, with between 10,000 and 19,900 and with 20,000 or more employees, that is to say, null for the durable goods manufacturing sector, as well as for the non-durable goods manufacturing, utilities and energy, banking and finance and insurance, 7.6% for the retail and wholesale trade, 46.15% for services and 5.55% for health care.

As regards the region variable, we can see that the highest participation is concentrated in the North Central region, 39%, whilst the lowest appears in the South Central area, 6.5%. This pattern is also reflected in the organizations with between 200 and 499 employees with percentages of 42.3% and 5%, respectively; between 1,000 and 1,999, with 31% and 14%, respectively; and between 2,000 and 4,999, with 40% and 9.7%, respectively. However, the participation differs for organizations with between 500 and 999 employees, where the maximum appears in the South-east region, 26.02%, and the minimum in the South Central area, 12.32%. For organizations with between 5,000 and 9,999 employees, the maximum value is in the North-east region, 31%, and the minimum simultaneously in the South-east, South Central and West Coast areas, 15.62%. Finally, for the biggest organizations, with between 10,000 and 19,999 employees and with 20,000 or more, the highest participation is in the North Central area, 54% and 61%, respectively, whilst the lowest appears in the South-east and West Coast regions for the former case, 7.6%, and in the West Coast area for the latter, 5%.

After describing the sample we now define in Appendix (Tables A2, A3 and A4), the 42 ratios grouped in the three categories, namely expenses, staffing and turnover ratios. The expenses group includes 30 measures which indicate the portion of cost and

expenses related to different human resources magnitudes, such as compensation, employee benefits, competitiveness, temporary and contract labor, medical coverage, training or staffing, and additionally taking into account the relation with performance, expressed as sales/revenue per employee. The staffing category is composed by 6 ratios, with these reflecting the portion of the employee comprised in different status levels within the organization, that is to say, as exempt status, non-exempt status or full time equivalent employees. Finally, the turnover group, again with 6 ratios, includes indicators which show the portion of the employee population that has been newly hired by the organization or terminated voluntarily or involuntarily from the organization.

The analysis comparisons were made using a circumstances of the moment of data, so we are not using time-series analysis, because of the importance of the results and conclusions to the demand of the moment. Additionally, a time series analysis were disturbed the employee rates, designing a trend completely unreal.

#### **4. Empirical results**

##### *Results by Profit Status (Table 2)*

With respect to the expenses ratios in relation to manpower, it is significant that the proportion of payroll and benefits expenses as a percentage of manpower expenses is similar in both profit and non-profit organizations, around 98%. When we divide both ratios we observe, as expected, that in the case of payroll expenses as a percentage of manpower expenses the highest value can be found in profit organizations, 80.5%, albeit with a very small difference when compared to non-profit organizations. By contrast, the benefits expenses as a percentage of manpower expenses is higher for non-profit organizations, 18.6%, as compared to 17.8% for profit organizations, which suggest that employees of non-profit organizations receive more benefits than their counterparts in profit organizations. In this context, we can note that the percentage of benefits over payroll expenses is higher for non-profit organizations, 24.2%, and it seems obvious that these organizations place emphasis on the benefits part of the total compensation package. On the other hand, the percentage of temporary and contract workers expenses in relation to manpower expenses is similar in both profit and non-

profit organizations, although with a higher level in the latter, 3.7%. This finding would appear to support the idea of voluntary employees in this type of organization.

With respect to operating expenses, we should note that all ratios are higher for non-profit organizations. Here, we should recall that operating expenses include all general and administrative overhead expenses, plus the cost of goods sold, that is to say, all the direct costs of manufacturing or providing the product or service. This means that the percentage of payroll and benefits expenses in relation to operating expenses is significantly higher for non-profit organizations, 45.4%.

TABLE 2. Ratios by Profit Status

|   | Profit<br>Organizations | Non-profit<br>Organizations | Entire Sample<br>Combined |
|---|-------------------------|-----------------------------|---------------------------|
| EXPENSES RATIOS   |                         |                             |                           |
| Payroll and Benefits Expenses as a Percent of Manpower Expenses                       | 98.2%                   | 98.3%                       | 98.3%                     |
| Payroll Expenses as a Percent of Manpower Expenses                                    | 80.5%                   | 79.7%                       | 80.2%                     |
| Benefits Expenses as a Percent of Payroll Expenses                                    | 20.5%                   | 24.2%                       | 21.8%                     |
| Temporary and Contract Worker Expenses as a Percent of Manpower Expenses              | 3.0%                    | 3.7%                        | 3.2%                      |
| Benefits Expenses as a Percent of Manpower Expenses                                   | 17.8%                   | 18.6%                       | 18.0%                     |
| Payroll and Benefits Expenses as a Percent of Operating Expenses                      | 32.3%                   | 45.4%                       | 37.4%                     |
| Payroll Expenses as a Percent of Operating Expenses                                   | 27.0%                   | 36.9%                       | 30.8%                     |
| Temporary and Contract Worker Expenses as a Percent of Operating Expenses             | 1.2%                    | 2.0%                        | 1.5%                      |
| Benefits Expenses as a Percent of Operating Expenses                                  | 6.3%                    | 8.9%                        | 7.3%                      |
| Medical Expenses as a Percent of Benefits Expenses                                    | 46.6%                   | 40.1                        | 44.4%                     |
| Medical Expenses per Covered Employee   | \$3,838                 | \$3,785                     | \$3,821                   |
| Paid Time Off (PTO) Expenses as a Percent of Benefits Expenses                        | 36.2%                   | 36.8%                       | 36.4%                     |
| Paid Time Off (PTO) Expenses as a Percent of Payroll Expenses                         | 8.9%                    | 10.0%                       | 9.2%                      |
| Manpower Expenses as a Percent of Gross Sales/Revenue                                 | 21.4%                   | -                           | 21.4%                     |
| Payroll Expenses as a Percent of Gross Sales/Revenue                                  | 18.7%                   | -                           | 18.7%                     |
| Benefits Expenses as a Percent of Gross Sales/Revenue                                 | 4.4%                    | -                           | 4.4%                      |
| Gross Sales/Revenue Payroll Expenses as a Percent of Gross Sales/Revenue              | \$356,080               | -                           | \$356,080                 |
| Payroll and Benefits Expenses per FTE Employee  | \$55,737                | \$51,761                    | \$54,330                  |
| Manpower Expenses per FTE Employee  | \$57,090                | \$52,995                    | \$55,630                  |
| Payroll Expenses per FTE Employee   | \$50,669                | \$42,783                    | \$47,970                  |
| Benefits Expenses per FTE Employee  | \$8,93                  | \$10,448                    | \$9,468                   |
| Human Resources Function Operating Expenses as a Percent of Manpower Expenses         | 4.4 %                   | 3.0 %                       | 3.9%                      |
| Human Resources Function Operating Expenses per Human Resources Function FTE Employee | \$96,707                | \$93,641                    | \$95,521                  |
| Human Resources Function Operating Expenses per FTE Employee                          | \$1,557                 | \$1,375                     | \$1,487                   |
| Human Resources Function Operating Expenses per Employee (Headcount)                  | \$1,964                 | \$1,536                     | \$1,801                   |
| Training Expenses as a Percent of Manpower Expenses                                   | 1.3%                    | 1.1%                        | 1.2%                      |
| Training Expenses per Employee (Headcount)  | \$642                   | \$451                       | \$578                     |
| Training Expenses per FTE employee  | \$597                   | \$472                       | \$555                     |
| Staffing Expenses as a Percent of Human Resources Function Operating Expenses         | 29.9%                   | 24.2%                       | 27.7%                     |
| Staffing Expenses per Hire  | \$2,696                 | \$1,590                     | \$2,331                   |

TABLE 2. Ratios by Profit Status  
(cont.)

|   | Profit<br>Organizations | Non-profit<br>Organizations | Entire Sample<br>Combined |
|---|-------------------------|-----------------------------|---------------------------|
| STAFFING RATIOS   |                         |                             |                           |
| Exempt FTE Employees as a Percent of Total FTE Employees  | 46.0%                   | 39.1%                       | 44.0%                     |
| NonExempt FTE Employees as a Percent of Total FTE Employees   | 52.3%                   | 57.5%                       | 53.8%                     |
| Total FTE Employees per Human Resources Function FTE Employee   | 105                     | 91                          | 101                       |
| Total Number of Employees (Headcount) per Human Resources Function FTE Employee                         | 96                      | 106                         | 99                        |
| Exempt FTE Human Resources Function Employees as a Percent of Human Resources Function FTE Employees    | 70.0%                   | 64.3%                       | 68.3%                     |
| NonExempt FTE Human Resources Function Employees as a Percent of Human Resources Function FTE Employees | 34.3%                   | 38.8%                       | 35.7%                     |
| TURNOVER RATIOS   |                         |                             |                           |
| Number of Hires as a Percent of Total Number of Employees (Headcount)                                   | 27.2%                   | 19.1%                       | 24.9%                     |
| Number of Separations as a Percent of Total Number of Employees (Headcount)                             | 24.5%                   | 19.7%                       | 23.1%                     |
| Number of Voluntary Separations as a Percent of Total Number of Employees (Headcount)                   | 19.0%                   | 14.6%                       | 17.7%                     |
| Number of Involuntary Separations as a Percent of Total Number of Employees (Headcount)                 | 9.8%                    | 7.6%                        | 9.2%                      |
| Number of Voluntary Separations as a Percent of Total Separations                                       | 73.5%                   | 79.9%                       | 75.4%                     |
| Number of Involuntary Separations as a Percent of Total Separations                                     | 37.9%                   | 31.2%                       | 36.0%                     |

This pattern is essentially repeated when we disaggregate these expenses in payroll, benefits and temporary and contract workers as a percentage of operating expenses. Here, we should take into account that most non-profit organizations receive public funds in addition to private donations, with this situation normally leading to an increase in the pay and benefits items in the balance sheet. The benefits route is usually a fiscally advantageous mechanism in managing the funds of non-profit organizations, in such a way that the benefits item is increased for non-profit organization in relation to operating expenses.

At the same time, it is interesting to analyze the components of those expenses which belong to benefits, namely medical, and paid time-off. In the former case, the level of the ratio is higher for profit organizations, 46.6%, and thus the emphasis is not placed on medical expenses as part of total benefits. The highest level of paid time-off can be found in non-profit organizations, as part of the explanation for benefits items. Additionally, if we consider training expenses, we can note that the percentage of expenses devoted to training is concentrated in profit organizations, 1.3%, because of the specificity of funds assigned to this item and the direct relationship with costs and profitability.

Staffing expenses have much more weight in profit organizations than in their non-profit counterparts, 29.9% as compared to 24.2%. This situation might lead us to conclude that selection is more rigorous in profit organizations, not due to the effect of selection in the performance of the organization, but rather because of the turnover which, in the majority of cases, results from the number of voluntary employees.

With respect to the turnover ratios, the concentration of the number of hires, 27.2%, and the number of separations, 24.5%, has a huge weight in profit organizations as compared to non-profit organizations. Thus, it is clear that the turnover is much higher in profit organizations and, in most cases, corporate identity plays an important role in the separation decision. By contrast, the number of voluntary separations as a percentage of total separations is higher in non-profit organizations, 79.9%, as a consequence of the different motivations for belonging to such an organization, with the number of involuntary separations being concentrated in profit organizations, 37.9%.

Finally, as regards the staffing ratios, the percentage of employees comprised of exempt status staff is concentrated in profit organizations, 46.0%. By contrast, the percentage of the employees comprised of non-exempt status staff is located in non-profit organizations, 57.5%.

*Results by Industry Sector (Table 3)*

In relation to manpower expenses, the highest value of payroll and benefits as a percent of these expenses is concentrated, as we expected, in the services sector, 98.8%, and in the banking and finance sector, 98.7%. Here, we should recall that the services sector includes services related to computer programming and data processing services and, more specifically, that the payroll and benefits in this sector have been remarkably high during recent years. Other services are related to construction, education, engineering and research services, general business services, government and social services, leisure and hospitality services, mining and agriculture, professional and general business services, professional and general business services, professional services, real estate and transportation services.

When we split the payroll and benefits in relation to manpower expenses, we can note that the payroll maintains its highest percentage in the banking and finance sector, 84.8%, but the percentage relative to benefits is located in the utilities and energy sector, 21.6%. As we argued before, this latter sector reflects industrial groups such as communications and telecommunications services, which have been overpaid during recent years, specifically in their benefits policies. This observation is consistent when we analyze benefits competitiveness through the rate of benefits in relation to the payroll. The manpower expenses in relation to gross sales/revenue, with this representing the percentage of sales/revenue spent on total manpower, is concentrated in the services sector, 26.1%. In this context, notice the demand coming from the following industry groups, which include: computer programming and data processing services, construction, education, engineering and research services, general business services, government and social services, leisure and hospitality services, mining and agriculture, professional and general business services, professional services, real estate, transportation services and others. Here, it is necessary to take into account the demand for manpower in relation to the service sector.



TABLE 3. Ratios by Industry Sector

|  | Durable Goods<br>Manufacturing | Non-Durable<br>Goods<br>Manufacturing | Utilities<br>and Energy | Retail and<br>Wholesale<br>Trade | Services | Health Care | Banking and<br>Finance | Insurance |
|--|--------------------------------|---------------------------------------|-------------------------|----------------------------------|----------|-------------|------------------------|-----------|
| EXPENSES RATIOS  |                                |                                       |                         |                                  |          |             |                        |           |
| R.1. Payroll and Benefits Expenses as a Percent of Manpower Expenses           | 98.1 %                         | 98.6%                                 | 97.6%                   | 96.7%                            | 98.8%    | 97.7%       | 98.7%                  | 97.7%     |
| R.2. Payroll Expenses as a Percent of Manpower Expenses                        | 78.7%                          | 83.2%                                 | 76.0%                   | 81.6%                            | 80.1%    | 81.0%       | 84.8%                  | 77.9%     |
| R.2. Benefits Expenses as a Percent of Payroll Expenses                        | 23.7%                          | 19.3%                                 | 27.2%                   | 17.8%                            | 22.2%    | 21.1 %      | 15.2%                  | 25.0%     |
| R.4. Temporary and Contract Worker Expenses as a Percent of Manpower Expenses  | 2.6%                           | 2.2%                                  | 4.9%                    | 4.9%                             | 2.9%     | 4.2%        | 2.8%                   | 3.3%      |
| R.5. Benefits Expenses as a Percent of Manpower Expenses                       | 19.7%                          | 15.4%                                 | 21.6%                   | 15.2%                            | 18.6%    | 16.7%       | 13.9%                  | 19.8%     |
| R.6. Payroll and Benefits Expenses as a Percent of Operating Expenses          | 32.6%                          | 31.8%                                 | 34.8%                   | 21.2%                            | 40.3%    | 52.4%       | 27.2%                  | 35.3%     |
| R.7. Payroll Expenses as a Percent of Operating Expenses                       | 29.6%                          | 30.8%                                 | 25.2%                   | 15.6%                            | 33.2%    | 41.4%       | 23.0%                  | 27.3%     |
| R.8. Temporary and Contract Worker Expenses as a Percent of Operating Expenses | 0.9%                           | 0.8%                                  | 3.4%                    | 0.8%                             | 0.5%     | 2.6%        | 1.4%                   | 1.4%      |
| R.9. Benefits Expenses as a Percent of Operating Expenses                      | 6.8%                           | 5.0%                                  | 8.1%                    | 4.2%                             | 8.1%     | 8.9%        | 4.5%                   | 7.4%      |
| R.10. Medical Expenses as a Percent of Benefits Expenses                       | 42.9%                          | 47.1%                                 | 35.9%                   | 49.6%                            | 45.2%    | 42.8%       | 51.8%                  | 40.8%     |
| R.11. Medical Expenses per Covered Employee                                    | \$4,405                        | \$3,649                               | \$4,149                 | \$3,321                          | \$3,648  | \$3,712     | \$3,525                | \$4,076   |
| R.12. Paid Time Off (PTO) Expenses as a Percent of Benefits Expenses           | 30.5%                          | 37.1%                                 | 42.4%                   | 39.6%                            | 31.6%    | 42.3%       | 49.6%                  | 36.9%     |
| R.13. Paid Time Off (PTO) Expenses as a Percent of Payroll Expenses            | 8.7%                           | 7.9%                                  | 12.9%                   | 6.4%                             | 9.7%     | 9.6%        | 7.2%                   | 8.6%      |
| R.14. Manpower Expenses as a Percent of Gross Sales/Revenue                    | 21.6%                          | 24.8%                                 | 16.4%                   | 10.4%                            | 26.1%    | 23.2%       | -                      | -         |
| R.15. Payroll Expenses as a Percent of Gross Sales/Revenue                     | 18.0%                          | 22.3%                                 | 13.0%                   | 9.6%                             | 23.7%    | 19.6%       | -                      | -         |
| R.16. Benefits Expenses as a Percent of Gross Sales/Revenue                    | 4.4%                           | 3.6%                                  | 3.2%                    | 1.5%                             | 6.1%     | 4.2%        | -                      | -         |

TABLE 3. Ratios by Industry  
Sector (cont.)

|  | Durable Goods<br>Manufacturing | Non-Durable<br>Goods<br>Manufacturing | Utilities<br>and Energy | Retail and<br>Wholesale<br>Trade | Services  | Health Care | Banking and<br>Finance | Insurance |
|--|--------------------------------|---------------------------------------|-------------------------|----------------------------------|-----------|-------------|------------------------|-----------|
| R.17. Gross Sales/Revenue Payroll Expenses as a<br>Percent of Gross Sales/Revenue              | \$311,311                      | \$323,396                             | \$565,526               | \$429,976                        | \$321,541 | \$369,670   | -                      | -         |
| R.18. Payroll and Benefits Expenses per FTE Employee   | \$53,366                       | \$59,038                              | \$62,984                | \$39,254                         | \$54,315  | \$47,219    | \$59,791               | \$58,277  |
| R.19. Manpower Expenses per FTE Employee   | \$54,284                       | \$59,900                              | \$65,921                | \$40,337                         | \$55,906  | \$48,342    | \$61,023               | \$58,741  |
| R.20. Payroll Expenses per FTE Employee  | \$43,394                       | \$49,379                              | \$52,008                | \$26,850                         | \$47,983  | \$43,609    | \$52,053               | \$45,132  |
| R.21. Benefits Expenses per FTE Employee   | \$10,032                       | \$9,020                               | \$14,039                | \$4,665                          | \$9,605   | \$8,302     | \$7,558                | \$10,959  |
| R.22. Human Resources Function Operating Expenses<br>as a Percent of Manpower Expenses         | 4.7 %                          | 2.0 %                                 | 2.5 %                   | 5.4 %                            | 5.2 %     | 1.8 %       | 2.7 %                  | 3.4 %     |
| R.23. Human Resources Function Operating Expenses<br>per Human Resources Function FTE Employee | \$135,030                      | \$68,826                              | \$103,884               | \$55,238                         | \$90,81 0 | \$76,728    | \$91,719               | \$114,266 |
| R.24. Human Resources Function Operating Expenses<br>per FTE Employee                          | \$ 1 ,550                      | \$1,153                               | \$ 1,686                | \$790                            | \$1 ,709  | \$862       | \$1,817                | \$2,049   |
| R.25. Human Resources Function Operating Expenses<br>per FTE Employee                          | \$2,721                        | \$ 1,092                              | \$1,238                 | \$1,387                          | \$1,858   | \$663       | \$1,60 1               | \$2,930   |
| R.26. Human Resources Function Operating Expenses<br>per Employee (Headcount)                  | 0.9%                           | 0.6%                                  | 1 . 1%                  | 2.6%                             | 1.7%      | 0.5%        | 1.2%                   | 0.9%      |
| R.27. Training Expenses as a Percent of Manpower<br>Expenses                                   | \$501                          | \$392                                 | \$1,191                 | \$281                            | \$763     | \$242       | \$672                  | \$461     |
| R.28. Training Expenses per Employee (Headcount)   | \$528                          | \$393                                 | \$665                   | \$396                            | \$686     | \$289       | \$824                  | \$470     |
| R.29. Training Expenses per FTE employee   | 15.8%                          | 36.0%                                 | 21 .4%                  | 55.3%                            | 27. 1%    | 30.3%       | 25.4%                  | 24.9%     |
| R.30. Staffing Expenses as a Percent of Human<br>Resources Function Operating Expenses         | \$2,997                        | \$3,499                               | \$3,162                 | \$1,531                          | \$2,216   | \$879       | \$2,913                | \$2,588   |

TABLE 3. Ratios by Industry  
Sector (cont.)

|  | Durable Goods<br>Manufacturing | Non-Durable<br>Goods<br>Manufacturing | Utilities<br>and Energy | Retail and<br>Wholesale<br>Trade | Services | Health Care | Banking and<br>Finance | Insurance |
|--|--------------------------------|---------------------------------------|-------------------------|----------------------------------|----------|-------------|------------------------|-----------|
| STAFFING RATIOS  |                                |                                       |                         |                                  |          |             |                        |           |
| R. 31. Exempt FTE Employees as a Percent of Total FTE Employees  | 41.2%                          | 40.7%                                 | 42.7%                   | 30.4%                            | 52.2%    | 30.1 %      | 46.9%                  | 54.3%     |
| R. 32. NonExempt FTE Employees as a Percent of Total FTE Employees   | 55.7%                          | 57.6%                                 | 54.6%                   | 63.8%                            | 45.3%    | 69.4%       | 52.7%                  | 46.2%     |
| R. 33. Total FTE Employees per Human Resources Function FTE Employee   | 89                             | 84                                    | 68                      | 180                              | 112      | 120         | 52                     | 64        |
| R. 34. Total Number of Employees (Headcount) per Human Resources Function FTE Employee                         | 72                             | 89                                    | 72                      | 150                              | 112      | 137         | 55                     | 69        |
| R. 35. Exempt FTE Human Resources Function Employees as a Percent of Human Resources Function FTE Employees    | 70.2%                          | 72.4%                                 | 72.1%                   | 68.2%                            | 67.6%    | 63.9%       | 68.5%                  | 66.6%     |
| R. 36. NonExempt FTE Human Resources Function Employees as a Percent of Human Resources Function FTE Employees | 35.5%                          | 33.8%                                 | 31.4%                   | 33.9%                            | 37.9%    | 38.4%       | 33.4%                  | 32.6%     |
| TURNOVER RATIOS  |                                |                                       |                         |                                  |          |             |                        |           |
| R. 37. Number of Hires as a Percent of Total Number of Employees (Headcount)                                   | 21.4%                          | 18.2%                                 | 13.0%                   | 42.5%                            | 28.1%    | 24.9%       | 26.3%                  | 15.6%     |
| R. 38. Number of Separations as a Percent of Total Number of Employees (Headcount)                             | 20.8%                          | 17.4%                                 | 16.4%                   | 38.8%                            | 23.9%    | 24.6%       | 25.8%                  | 16.5%     |
| R. 39. Number of Voluntary Separations as a Percent of Total Number of Employees (Headcount)                   | 14.3%                          | 12.9%                                 | 12.0%                   | 30.9%                            | 17.6%    | 21.8%       | 22.2%                  | 12.1%     |
| R. 40. Number of Involuntary Separations as a Percent of Total Number of Employees (Headcount)                 | 8.5%                           | 6.6%                                  | 8.5%                    | 15.1 %                           | 10.1 %   | 8.8%        | 9.2%                   | 5.5%      |
| R. 41. Number of Voluntary Separations as a Percent of Total Separations                                       | 68.9%                          | 72.2%                                 | 72.0%                   | 78.6%                            | 74.6%    | 82.4%       | 80.8%                  | 79.4%     |
| R. 42. Number of Involuntary Separations as a Percent of Total Separations                                     | 38.8%                          | 39.4%                                 | 48.0%                   | 37.7%                            | 37.7%    | 29.5%       | 27.1%                  | 28.8%     |

Turning to operating expenses, the highest value of payroll and benefits expenses as a percentage of operating expenses appears in the health care sector, 52.4%. When we analyze some components of total compensation, such as medical expenses and paid time-off as a percent of benefits expenses, we can observe that the highest percentage is concentrated in the banking and finance sector, 51.8%. This observation is particularly worthy of note, in the sense that the highest weight of benefits, either in relation to manpower expenses or operating expenses, are not concentrated in banking and finance. The years we are analyzing reflect the upsurge of the telecommunications sector. We should not forget that the banking and financial sub-sector traditionally has high levels of compensation packages. Finally, the ratio that expresses training expenses as a percentage of manpower expenses is concentrated in the retail and wholesale trade, 2.6%.

The staffing expenses in relation to operating expenses have their maximum weight in the retail and wholesale trade, 55.3%, with the high level of staffing costs per hire being concentrated in the non-durable goods manufacturing sector. Moreover, and as we expected, the staffing ratios in relation to exempt and non-exempt status employees as a percentage of total full time employees, have their maximum level for white collar employees in the insurance sector, 54.3%, but unexpectedly, the main proportion of blue collar employees is concentrated in the health care sector, 69.4%.

With respect to turnover ratios, the highest number of hires and separations as a percentage of the total number of employees is concentrated in the retail and wholesale trade sector, 42.5% and 38.8%, respectively. Additionally, we have found that the highest number of voluntary separations is in the health care sector, whereas involuntary separations are found in the utilities and energy sector.

#### *Results by Size (Table 4)*

In relation to the expenses ratios, the higher percentage of payroll and benefits with respect to manpower expenses appears in the larger organizations, more specifically, if we measure size through sales size, 98.3%, and employee size, 98.2%. However, when we measure by asset size, we find that the concentration is found in the smaller organizations, with this situation possibly being due to the intensity of capital when we measure size via assets. When we analyze the different components, we can observe,

somewhat unexpectedly, that the proportion of payroll expenses in relation to manpower expenses is located in smaller organizations, 81.7%, 83% and 81.3% in relation to sales size, asset size and employee size, respectively. However, the percentage of benefits is again found in larger organizations, save for when we measure by asset size, although here there is a very small difference between large and small organizations. This observation can lead us to assume that in large organizations the total compensation package is higher, but with high specific weight in the benefits items. Additionally, we should not forget the traditional tax question. This observation is consistent if our measure is the relationship between benefits expenses/payroll expenses with respect to benefits competitiveness. In the same way, temporary and contract worker expenses as a percentage of manpower expenses are concentrated in the larger organizations, except if our observation is made by employee size, and again, in this case, with only limited differences when compared to smaller organizations.

If our point of reference for these compensation components is operating expenses, we can observe that the highest weight of percentages can be found in the smaller organizations, where the percentage of payroll and benefits has levels of 35%, 32.1% and 38.6% for the different measures of size, sales, assets and employees, respectively. The same situation is found when we analyze payroll expenses, temporary and contract worker expenses and benefits expenses. This observation again leads us to the question of capital intensity; big organizations might benefit from larger economies of scale and thus such organizations are usually more capital intensive, as compared to human capital or manpower capital intensive.

When we analyze some benefits components, such as paid time-off and medical expenses, we can observe that for the former case the proportion of this benefit is higher in smaller organizations, mostly due to the culture of the organization, when classified by sales, assets and sizes, with 37.6%, 58.5% and 38.5% respectively. In the case of medical expenses, the concentration is just the opposite, being found amongst larger organizations, with 50.2% for asset size and 49.6% for employee size, in relation to the higher levels of benefits for these organizations. The sole exception relates to sales size, where the concentration is in the smaller organizations, 46.9%. In relation to training expenses as a percentage of manpower expenses, that is to say, the proportion of manpower expenses spent on training, the highest levels are concentrated in the smallest organizations in relation to sales size, 1.4%, and employee size, 1.2%.

TABLE 4. Ratios by Employee Size

|  | Sales Size            |                          | Asset Size        |                      | Employee Size         |                          |
|--|-----------------------|--------------------------|-------------------|----------------------|-----------------------|--------------------------|
|  | Under \$100.0 Million | \$500.0 Million and over | Under \$1 Billion | \$1 Billion and Over | Under \$100.0 Million | \$500.0 Million and over |
| EXPENSES RATIOS  |                       |                          |                   |                      |                       |                          |
| R.1. Payroll and Benefits Expenses as a Percent of Manpower Expenses           | 98.0%                 | 98.3%                    | 98.9%             | 97.9%                | 97.9%                 | 98.2%                    |
| R.2. Payroll Expenses as a Percent of Manpower Expenses                        | 81.7%                 | 76.9%                    | 83.0%             | 82.5%                | 81.3%                 | 79.5%                    |
| R.2. Benefits Expenses as a Percent of Payroll Expenses                        | 19.0%                 | 24.2%                    | 17.1%             | 17.3%                | 19.3%                 | 21.5%                    |
| R.4. Temporary and Contract Worker Expenses as a Percent of Manpower Expenses  | 3.1%                  | 3.3%                     | 2.3%              | 3.6%                 | 3.6%                  | 3.3%                     |
| R.5. Benefits Expenses as a Percent of Manpower Expenses                       | 16.3%                 | 21.4%                    | 15.9%             | 15.4%                | 16.5%                 | 18.7%                    |
| R.6. Payroll and Benefits Expenses as a Percent of Operating Expenses          | 35.0%                 | 30.5%                    | 32.1%             | 26.2%                | 38.6%                 | 38.8%                    |
| R.7. Payroll Expenses as a Percent of Operating Expenses                       | 31.0%                 | 24.8%                    | 25.9%             | 21.9%                | 32.8%                 | 29.8%                    |
| R.8. Temporary and Contract Worker Expenses as a Percent of Operating Expenses | 1.4%                  | 1.5%                     | 1.3%              | 1.5%                 | 1.9%                  | 1.6%                     |
| R.9. Benefits Expenses as a Percent of Operating Expenses                      | 6.6%                  | 5.8%                     | 7.4%              | 3.8%                 | 7.2%                  | 7.1%                     |
| R.10. Medical Expenses as a Percent of Benefits Expenses                       | 46.9                  | 40.3                     | 49.6              | 50.2                 | 44.8                  | 49.6                     |
| R.11. Medical Expenses per Covered Employee:                                   | \$3,648               | \$3,965                  | \$3,153           | \$4,068              | \$3,792               | \$3,636                  |
| R.12. Paid Time Off (PTO) Expenses as a Percent of Benefits Expenses           | 37.6%                 | 30.9%                    | 58.5%             | 35.6%                | 38.5%                 | 31.3%                    |
| R.13. Paid Time Off (PTO) Expenses as a Percent of Payroll Expenses            | 9.6%                  | 9.1%                     | 8.8%              | 6.2%                 | 9.1%                  | 9.7%                     |
| R.14. Manpower Expenses as a Percent of Gross Sales/Revenue                    | 28.0%                 | 16.8%                    | -                 | -                    | 23.6%                 | 17.7%                    |
| R.15. Payroll Expenses as a Percent of Gross Sales/Revenue                     | 24.6%                 | 14.4%                    | -                 | -                    | 21.1%                 | 16.1%                    |
| R.16. Benefits Expenses as a Percent of Gross Sales/Revenue                    | 5.8%                  | 3.5%                     | -                 | -                    | 4.5%                  | 2.9%                     |
| R.17. Gross Sales/Revenue Payroll Expenses as a Percent of Gross Sales/Revenue | 243,835               | \$519,127                | -                 | -                    | \$323,701             | \$259,893                |
| R.18. Payroll and Benefits Expenses per FTE Employee                           | \$54,412              | \$60,183                 | \$55,511          | \$58,731             | \$53,544              | \$55,105                 |
| R.19. Manpower Expenses per FTE Employee                                       | \$55,766              | \$61,564                 | \$54,029          | \$60,207             | \$55,140              | \$56,327                 |

TABLE 4. Ratios by Employee  
Size (cont.)

|   | Sales Size               |                             | Asset size           |                         | Employee size            |                             |
|---|--------------------------|-----------------------------|----------------------|-------------------------|--------------------------|-----------------------------|
|   | Under \$100.0<br>Million | \$500.0 Million<br>and over | Under \$1<br>Billion | \$1 Billion<br>and Over | Under \$100.0<br>Million | \$500.0 Million<br>and over |
| R.20. Payroll Expenses per FTE Employee   | \$42,470                 | \$59,844                    | \$43,296             | \$50,505                | \$52,195                 | \$40,921                    |
| R.21. Benefits Expenses per FTE Employee:   | \$8,044                  | \$11,231                    | \$6,359              | \$8,250                 | \$8,728                  | \$9,698                     |
| R.22. Human Resources Function Operating<br>Expenses as a Percent of Manpower Expenses            | 6.2%                     | 2.8%                        | 2.7%                 | 2.8%                    | 4.6%                     | 2.3%                        |
| R.23. Human Resources Function Operating<br>Expenses per Human Resources Function FTE<br>Employee | \$73,753                 | \$122,234                   | \$91,563             | \$86,465                | \$88,519                 | \$97,978                    |
| R.24. Human Resources Function Operating<br>Expenses per FTE Employee                             | \$1,758                  | \$1,086                     | \$2,261              | \$1,663                 | \$1,934                  | \$602                       |
| R.25. Human Resources Function Operating<br>Expenses per FTE Employee                             | \$2,169                  | \$1,348                     | \$1,419              | \$2,754                 | \$2,447                  | \$1,656                     |
| R.26. Human Resources Function Operating<br>Expenses per Employee (Headcount)                     | 1.4%                     | 0.6%                        | 0.6%                 | 1.2%                    | 1.2%                     | 0.5%                        |
| R.27. Training Expenses as a Percent of Manpower<br>Expenses                                      | \$772                    | \$234                       | \$288                | \$624                   | \$657                    | \$237                       |
| R.28. Training Expenses per Employee (Headcount)  | \$634                    | \$288                       | \$305                | \$745                   | \$686                    | \$165                       |
| R.29. Training Expenses per FTE employee  | 30.2%                    | 31.5%                       | 31.4%                | 28.5%                   | 26.2%                    | 32.1%                       |
| R.30. Staffing Expenses as a Percent of Human<br>Resources Function Operating Expenses            | \$2,894                  | \$3,322                     | \$1,305              | \$2,732                 | \$2,605                  | \$3,222                     |

TABLE 4. Ratios by Employee  
Size (cont.)

|  | Sales Size               |                             | Asset Size           |                         | Employee size            |                             |
|--|--------------------------|-----------------------------|----------------------|-------------------------|--------------------------|-----------------------------|
|  | Under \$100.0<br>Million | \$500.0 Million<br>and over | Under \$1<br>Billion | \$1 Billion<br>and Over | Under \$100.0<br>Million | \$500.0 Million<br>and over |
| STAFFING RATIOS  |                          |                             |                      |                         |                          |                             |
| R. 31. Exempt FTE Employees as a Percent of Total FTE Employees  | 52.1%                    | 44.8%                       | 39.3%                | 55.4%                   | 50.3%                    | 39.7%                       |
| R. 32. NonExempt FTE Employees as a Percent of Total FTE Employees   | 46.0%                    | 53.2%                       | 59.4%                | 46.4%                   | 49.0%                    | 56.2%                       |
| R. 33. Total FTE Employees per Human Resources Function FTE Employee   | 61                       | 170                         | 54                   | 56                      | 59                       | 227                         |
| R. 34. Total Number of Employees (Headcount) per Human Resources Function FTE Employee                         | 63                       | 130                         | 55                   | 61                      | 66                       | 167                         |
| R. 35. Exempt FTE Human Resources Function Employees as a Percent of Human Resources Function FTE Employees    | 72.7%                    | 68.1%                       | 65.8%                | 66.9%                   | 73.7%                    | 64.8%                       |
| R. 36. NonExempt FTE Human Resources Function Employees as a Percent of Human Resources Function FTE Employees | 39.4%                    | 32.8%                       | 43.8%                | 31.6%                   | 39.5%                    | 32.6%                       |
| TURNOVER RATIOS  |                          |                             |                      |                         |                          |                             |
| R. 37. Number of Hires as a Percent of Total Number of Employees (Headcount)                                   | 31.5%                    | 22.7%                       |                      | 24.6%                   | 26.2%                    | 25.0%                       |
| R. 38. Number of Separations as a Percent of Total Number of Employees (Headcount)                             | 25.7%                    | 22.7%                       | 25.2%                | 23.6%                   | 23.3%                    | 25.1%                       |
| R. 39. Number of Voluntary Separations as a Percent of Total Number of Employees (Headcount)                   | 18.4%                    | 18.2%                       | 20.2%                | 19.7%                   | 16.9%                    | 22.2%                       |
| R. 40. Number of Involuntary Separations as a Percent of Total Number of Employees (Headcount)                 | 10.3%                    | 9.8%                        | 9.1%                 | 8.8%                    | 9.3%                     | 11.4%                       |
| R. 41. Number of Voluntary Separations as a Percent of Total Separations                                       | 71.9%                    | 68.9%                       | 83.1%                | 77.9%                   | 73.7%                    | 71.5%                       |
| R. 42. Number of Involuntary Separations as a Percent of Total Separations                                     | 39.0%                    | 43.7%                       | 23.0%                | 31.6%                   | 35.8%                    | 40.4%                       |



However, if our measure is by asset size, the higher level is found in the larger organizations, 1.2%, due to capital intensity.

With respect staffing expenses, the higher costs per hire can be found in the largest organizations, while the staffing expenses as a proportion of the human resources operating expenses spent on staffing, are concentrated in the larger organizations, 31.5% when measured by sales size, and 32.1% when measured by employee size. By contrast, if our point of reference is asset size, then we find the maximum concentration in the smallest organizations. Although this is the usual trend, this pattern has been boosted significantly in the years under analysis.

As regards the staffing ratios, the number of exempt employees that reflect white collar employees can be found in the smaller organizations when our measure is by sales size, 52.1%, and by employee size, 50.3%, but is concentrated in the largest organizations when the measure by reference to asset size. In this line, the trend for non-exempt employees is just the opposite; that is to say, the proportion of employees that reflect blue collar employees is concentrated in the larger organizations when our point of reference is sales size, 53.2%, and employee size, 56.2%, but this pattern is broken when our measure is asset size, 59.4%. This observation in relation to the concentration of white and blue collar employees in the bigger or smaller organizations supports our argument of capital intensity and manpower intensity. Thus, we can observe that organizations with higher capital intensity have more white collar employees and less blue collar employees.

In relation to turnover ratios, when we analyze the percentage of the number of hires as a percentage of the total number of employees, this percentage is, unexpectedly, higher for smaller businesses, that is to say, 31.5% in the case of sales size, and 26.2% for employee size. This same tendency is observed for the number of separations, with 25.7% for sales size and 25.2% when we measure by reference to asset size. However, the tendency is different when our point of reference is employee size, 25.1%. It is noteworthy that the larger number of voluntary separations is found in the smallest organizations, whereas the larger number of involuntary separations is concentrated in the largest organizations. In this regard, it is conceivable that turnover ratios might vary

by size. In relation the larger economies of scale enjoyed by larger organizations, the rates evidence shows that smaller organizations have lower turnover ratios. Thus, even though we are supposing that there might be a statistically significant relationship, the evidence shows that there is no apparent general relationship between the size of the organization and employee turnover.

#### *Elasticities (Table 5)*

Given that sufficient data is available to provide a realistic picture of the relationship between an organizational scope factor and a employee-related factor, the aim of this section is to analyze the slope between these variables. This analysis will allow us to compare the incremental increase in the organizational and employee variables in our sample organizations, differentiating by profit status, industry super-sector and industry sector, in such a way that the analysis is a reference for establishing comparisons between organizations.

Table 5 first shows the incremental increase of full time equivalent employees (FTE), human resources function operating expenses and manpower expenses related to gross sales revenues. In relation to full time equivalent employees, we can note that it is in the retail and wholesale sector where the incremental increase of full time equivalents per unit of sales revenue is the highest. By contrast, the health care sector exhibits the lowest increase. If we analyze the relationship between human resources function operating expenses and gross sales revenues, we find that the highest incremental is in the health care sector, with this variable also being explained by gross sales revenue. In other words, the variable that represents gross sales revenue is positively significant for the human resources function variable in this sector. The lowest increase is observed in the services sector. When we establish the relationship between manpower expenses and gross sales revenue, we observe that the maximum movement is found in the retail and wholesale sector, with the minimum being in durable goods manufacturing. It is worth noting this variable is significant in the health care sector, so manpower expenses are again explained by gross sales revenue.

If we analyze these three variables in relation to operating expenses, we can observe with respect to full-time equivalent employees that the highest incremental increase is

found in the retail and wholesale sector, while the lowest is observed in the health care sector.

TABLE 5. Elasticities

|                                    | Full-Time<br>Equivalents<br>Related to<br>Gross<br>Sales/Revenue | Full-Time<br>Equivalents<br>Related to<br>Operating<br>Expense | Payroll<br>Expense<br>Related to<br>Full-Time<br>Equivalents | Benefits<br>Expense<br>Related to<br>Full-Time<br>Equivalents | Medical<br>Expense<br>Related to<br>Full-Time<br>Equivalents | Paid-Time<br>Off (PTO)<br>Expense<br>Related to<br>Full-Time<br>Equivalents | Full-Time<br>Equivalents<br>Related to<br>Temporary<br>and Contract<br>Workers<br>Expense | Human<br>Resources<br>Function<br>Operating<br>Expense<br>Related to<br>Full-Time<br>Equivalents | Human<br>Resources<br>Function<br>Operating<br>Expense<br>Related to<br>Gross<br>Sales/Revenue | Human<br>Resources<br>Function<br>Operating<br>Expense<br>Related to<br>Operating<br>Expense | Manpower<br>Expense<br>Related to<br>Gross<br>Sales/Revenue | Manpower<br>Expense<br>Related to<br>Operating<br>Expense |
|------------------------------------|--|--|--|---|--|---|---|--|--|--|---|---|
| PROFIT STATUS                      |  |  |  |   |  |   |   |  |  |  |   |   |
| Profit Organizations               | 0.802  | 0.376  | 0.916  | 0.910   | 0.941  | 0.922   | 0.447   | 0.735  | 0.673  | 0.585  | 0.784   | 0.727   |
| Non-profit Organizations           |  | 0.383  | 0.933  | 0.980   | 0.980  | 0.961   | 0.355   | 0.613  |  | 0.475  |   | 0.658   |
| INDUSTRY                           |  |  |  |   |  |   |   |  |  |  |   |   |
| SUPER-SECTOR                       |  |  |  |   |  |   |   |  |  |  |   |   |
| All Manufacturing                  | 0.773  | 0.391  | 0.947**  | 0.873   | 1.025  | 1.190   | 0.532   | 0.785  | 0.798  | 0.426  | 0.619   | 0.814   |
| All Non-Manufacturing              | 0.803  | 0.398  | 0.917  | 0.930   | 0.923  | 0.956   | 0.429   | 0.619  | 0.639  | 0.551  | 0.870   | 0.721   |
| Financial Services                 |  | 0.268  | 0.938  | 1.015   | 1.025  | 0.600   | 0.304   | 1.023  |  | 0.551  |   | 0.452   |
| INDUSTRY SECTOR                    |  |  |  |   |  |   |   |  |  |  |   |   |
| Durable Goods<br>Manufacturing     | 0.719  | 0.396  | 0.942**  | 0.811   | 1.027  | 1.184   | 0.509   | 0.802  | 0.812  | 0.390  | 0.521   | 0.770   |
| Non-Durable Goods<br>Manufacturing | 0.849  | 0.283  | 0.917***   | 1.158*  | 1.035  | 1.080*  | 0.681   | 0.739  | 0.670  | 0.776  | 0.798   | 0.993*  |
| Utilities and Energy               | 0.665  | 0.359  | 1.193  | 0.761   | 0.922*   | 1.183   | 0.274   | 0.818  | 0.728  | 0.703  | 0.874   | 0.799   |
| Retail and Wholesale<br>Trade      | 0.899  | 0.553  | 0.745  | 0.852   | 0.668  | 0.689   | 0.493   | 0.677  | 0.829  | 0.209  | 0.974   | 0.650   |
| Services                           | 0.848  | 0.441  | 0.943  | 0.953   | 1.022  | 0.921   | 0.545   | 0.582  | 0.529  | 0.553  | 0.879   | 0.729   |
| Health Care                        | 0.653  | 0.265  | 0.969  | 0.894   | 0.698  | 1.031   | 0.130   | 0.619  | 1.124***   | 0.786  | 0.834*  | 0.768   |
| Banking and Finance                |  | 0.466  | 1.054  | 1.083   | 1.160**  | 0.610   | 0.436   | 1.392  |  | 0.598  |   | 0.434   |
| Insurance                          |  | 0.148  | 0.736  | 0.792   | 0.827  | 0.299   | 0.123   | 0.635  |  | 0.530  |   | 0.454   |

\* significant at the 10% level. \*\* significant at the 5% level. \*\*\* significant at the 1% level

The slope for the relationship between the human resources function variable and operating expenses exhibits the opposite behavior, in such a way that the maximum increase is found in the health care sector and the minimum in the retail and wholesale sector. Finally, with respect to manpower expenses, the highest incremental increase is found in the health care sector and the lowest in financial services.

Regarding full-time equivalent employees, we analyze some organizational and employee variables, namely payroll, benefits, medical, paid time-off and human resources function operating expenses. In relation to payroll expenses, the maximum increase is found in the banking and finance sector, whilst the minimum is observed in the insurance sector. Additionally, FTE employees are positively significant in several sectors, specifically in all the manufacturing super-sector, in the durable goods manufacturing sector and in the non-durable goods manufacturing sector. When we consider benefits expenses, we find that the highest increase is produced in the non-durable goods manufacturing sector. Additionally, this variable is significant, so in the case of this sector, benefits expenses are explained by full-time equivalents. At the same time, the lowest movement is observed in the retail and wholesale trade sector. With respect to medical expenses, the largest incremental increase in relation to FTE employees is found in the banking and finance sector, with the variable being significant. This significance is also observed for the utilities and energy sector. The minor slope is located in the retail and wholesale sector. In relation to paid time-off expenses, the largest increase is found in all the manufacturing industry super-sector, more specifically in durable goods manufacturing, whilst the smallest increase is observed in the financial services super-sector, more precisely in the banking and finance industry sector. Attention should be drawn to the significance of the variable for non-durable goods manufacturing. Finally, when we analyze the human resources operating expenses variable, the largest increase is observed in the banking and finance sector, whilst the services sector shows the smallest increase.

As a final observation, the relationship between FTE employees with respect to temporary and contract workers expenses shows its maximum increase in the non-durable goods manufacturing sector, whilst the minor scope is presented in the insurance sector.

As a closing comment on the elasticities, the analysis presented in this study is a measure of the relationship between an organizational scope factor (such as sales/revenue) and an employee related factor (such as the total number of full-time equivalents) or the relationship between two employee-related factors. As such, it represents a useful and simple methodology for practitioners when making direct comparisons between various organizational scope factors and employee-related factor relationships involving comparable organizations.

## **5. Conclusions and policy implications**

In this paper, we have carried out a practical evaluation of employee productivity in the United States using a professional data base, namely the ECS Survey on Employee Efficiency (2000/2001), which includes responses of 453 organizations covering 1,685,336 employees. To that end, we measure employee productivity of US organizations, differentiated by profit status, industry sector and employee size, using 42 indicators divided into three categories, that is to say, expenses, staffing and turnover ratios.

Our first descriptive analysis has confirmed that the majority of the sample organizations are concentrated in the North Central region, 37.1%, whilst the South Central region shows the lowest number, 9.9%, with the remaining percentages corresponding to the North-east, 22.1%, the South-east, 15.5%, and the West Coast, 15.5%. Moreover, the highest percentage of sample organizations have been found in the smallest organizations, that is to say, under 200 employees, 20.3%, with the next largest percentage appearing in the 2,000 to 4,999 employees category, 18.1%. By contrast, the lowest percentage has been detected in big organizations, that is to say, the 10,000 to 19,999 employees group, 2.9%.

Turning now to our empirical findings, after first presenting some results according to the profit status, industry sector and employee size variables, we have obtained a number of elasticities. Thus, as regards profit status, we have concluded that, in relation to manpower expenses, the compensation package of both profit and non-profit organizations exhibit similar levels. The differences are observed in relation to benefits expenses, which are concentrated in non-profit organizations. As regards operating

expenses, we have found that all ratios are higher for non-profit organizations. In relation to staffing and turnover ratios, we have noted that the concentration of voluntary separations and non-exempt employees are again located in non-profit organizations. In the majority of cases, this situation would appear to reflect the phenomenon of organizational pride, where feelings of pride and respect towards the organization can have a positive effect on job performance. Having said that, it is also the case that few organizations have to date imitated their non-profit counterparts in hiring, retaining and continuing to motivate, intrinsically motivated employees.

With respect to the industry sector, we have found that the highest rate values in relation to the complete compensation packages are concentrated in both the banking and finance and the utilities and energy sectors. Whilst the cash compensation part maintains its highest percentage in the banking and finance sector, the percentage relative to benefits is located in the utilities and energy sector. This latter pattern has also been observed in relation to operating expenses. This analysis reflects the upsurge of the telecommunications sector during recent years and, more specifically, the fact that its employees have been overpaid, particularly with respect to benefits policies.

As regards organization size, we have noted that the highest concentration of complete compensation package is located in the larger organizations. When cash compensation and benefits have been analyzed separately, it has emerged that the highest levels of cash compensation are found in smaller organizations, whilst the percentage of benefits are concentrated in larger organizations. This observation can lead us to assume that the total compensation package is higher in these latter organizations, with a high specific weight in the benefits items, a finding that is consistent if our measure is taken as the relationship between benefits expenses/payroll expenses with respect to benefits competitiveness. With respect to turnover ratios, attention should particularly be drawn to the fact that the largest number of voluntary separations is found in the smallest organizations, whereas the largest number of involuntary separations is concentrated in the largest organizations, which would appear to suggest that turnover ratios might vary by size. As regards the larger economies of scale enjoyed by bigger organizations, the rates evidence shows that smaller organizations have lower turnover ratios. Thus, even though we are supposing that there might be a statistically significant relationship, the evidence suggest that there is no

apparent general relationship between the size of the organization and employee turnover.

Finally, the elasticities allow us to conclude that in the health care sector variables such as human resources operating expenses are explained by gross sales revenue, implying that a variation in gross sales revenue has a positive impact on these expenses. This same pattern is followed by FTE employees in the manufacturing super-sector with respect to payroll expenses. As regards benefits expenses, we have found that the FTE employees variable is significant for the durable goods manufacturing sector. Turning to medical expenses, the largest incremental increase in relation to FTE employees has been found in the banking and finance sector, with the variable, furthermore, being significant. This significance has also been noted for the utilities and energy sector. In relation to paid time-off expenses, attention should be drawn to the significance of this variable for non-durable goods manufacturing.

In closing, let us consider the policy implications that emerge from our empirical findings. However, before doing so, we must first consider precisely what results have emerged from this study and the direction that these are taking us. As regards the first aspect, we would argue that these results represent a new framework for the continued development of information, policy and programs that will ensure both continued industrial development and full employee utilization in the US. Currently, it may well be difficult to appreciate the contribution that can be made by such a process-based system for industry information. However, we should recall that we are dealing with an economy with an increasingly important service sector that needs to be nurtured and further developed. Look at the unexplored impact of recent technology changes and consider the gains that flow from an increased ability to define new production and employment opportunities. Take into account the fact that a dynamically changing economy must be able to offer its citizens education or programs to develop skills so that they can fully exploit new job opportunities. Existing workers should have mobility opportunities based on the recognition that skills are not tied to a particular industry or job title. These new strengths depend upon developing and using the kinds of information and analyzes that can keep workers, educators, employers and employee program administrators abreast or ahead of changing conditions. Whilst this will not happen overnight, these new systems are now being put into use and are the right answer for guiding the US economy into the new century.



Although it is still too early to point to realized benefits, some gains from the new framework for occupational analysis can be anticipated. First and foremost, more informed policy attention will be directed towards changing job conditions, availability, and impacts in the US economy. Intra and inter-industry skill requirements will be better defined, with future education and training programs contributing to enhanced worker mobility and increased employer willingness to hire from outside the traditional industry patterns of requirements. Changes at industry level will be better satisfied by the increased mobility opportunities enjoyed by workers. Over the long-term, the role of work in defining socioeconomic status will be diminished in favor of increasing the economic importance of an individual's education and the planned acquisition of skills.

## References

Baron, J.N., Blake, D. y W.T. Bielby (1986). The Structure of Opportunity: How Promotion Ladders Vary Within and Among Organizations. *Aministrative Science Quarterly*, 31, 248-273.

Baron, R.A. (1984). Reducing Organizational Conflict: An Incompatible Response Approach. *Journal of Applied Psychology*, 69, 2, 272-300.

Benson, P.G., Dickinson, T.L. y C.O. Neidt (1987). The Relationship Between Organizational Size and Turnover: A Longitudinal Investigation. *Human Relations*, 40, 15-30.

Cohen, Y. y F. Pfeffer (1986). Organizational Hiring Standards. *Aministrative Science Quartely*, 31, 2-24.

Diprete, T.A. (1989). *The Bureaucratic Labor Market: The Case of the Federal Civil Service*. Plenum Press.

Doeringer, P. y M.J. Piore (1971). *Internal Labor Markets and Manpower Analysis*. Heath Lexington Books.

Farrell, D. y C.E. Rusbult (1981). Exchange Variables as Predictors of Job Satisfaction, Job Commitment, and Turnover: The Impact of Rewards, Costs, Alternatives, and Investments. *Organizational Behavior and Human Performance*, 28, 1, 78-96.

Fry, T. (1992). Manufacturing Performance and Cost Accounting. *Produccions and Inventory Management Journal*, 33, 3, 30-35.

Garen, JE. (1985). Worker Heterogeneity, Job Screening, and Firm Size. *The Journal of Political Economy*, 93, 522-540.

Griffeth, R.W. y P.W. Hom (1988). A Comparison of Different Conceptualizations of Alternatives in Turnover Research. *Journal of Organizational Behavior*, 13, 103-111.

Hui, H. (1988). Impacts of Objective and Subjetives Labor Market Conditions on Employee Turnover. *Journal of Occupational Pyichology*, 61, 211-219.

Hulin, C.L., Roznowski, M. y D. Hachiya (1985). Altenative Opportunities and Withdrawal Decisions: Empirical and Theoretical Discrepancies and an Integration. *Psychology Bulletin*, 97, 223-250.

Idson, T.L. y D.J. Feaster (1990). A Selectivuty Model of Employer-Size Wage Differentials. *Journal of Labor Economics*, 8, 99-122.

Kirschenbaum, A. y R. Mano Negrin (1999). Underlying Labor Market Dimensions of "Opportunities": The Case of Employee Turnover. *Human Relations*, 52, 1233-1255.

Laker, D.R. (1991). Job Search, Perceptions of Alternative Employment and Turnover. *Journal of Applied Research*, 7, 6-16.

Lee, T.W. (1988). How Job Dissatisfaction Leads to Employee Turnover. *Journal of Business and Psychology*, 2, 263-271.

Lee, T.W., Ashfold, S.J., Walsh, J.P. y R.T. Mowday (1992). Commitment Propensity, Organizational Commitment and Voluntary Turnover: A Longitudinal Study of Organizational Entry Processes. *Journal of Management*, 18, 1-18.

McKeen, C.A. y R.J. Burke (1992). Supporting the Career aspirations of Managerial Women: Desired Developmental Opportunities. *Women in Management Review*, Bradford, 7, 5, 16-24.

Michaels, C.E. y P.E. Spector (1982). Causes of Employee Turnover: A Test of the Mobley, Griffeth, Hand and Meglino Model. *Journal of Applied Psychology*, 67, 53-59.

Muller, C. y J. Price (1990). Economic Psychological and Sociological Determinants of Voluntary Turnover. *The Journal of Behavioral Economics*, 19, 321-335.

Perrow, C. (1983). The Organizational Context of Human Factors Engineering. *Administrative Science Quarterly*, 28, 4, 521-542.

Pfeffer, F. y Y. Cohen (1983). *Understanding the Employment Relationships: Correlates of Internal Labor Markets and Arrangements in Organizations*. Mimeo. Graduate School of Business. Stanford University.

Price, J. y C. Muller (1981). A Casual Model of Turnover for Nurses. *Academy of Management Journal*, 24, 543-565.

Price, J. y C. Muller (1986). *Absenteeism and Turnover of Hospital Employees*. Greenwich. JAI Press.

Schervish, P.G. (1981). The Structure of Employment and Unemployment. En *Sociological Perspectives on Labor Markets* de Berg (Ed.). Academic Press.

Schervish, P.G. (1983). *The Structural Determinants of Unemployment, Vulnerability and Power in Markets Relations*. Academic Press.

Shikiar, R. y R. Freundeberg (1982). Unemployment Rates as a Moderator of Job Dissatisfaction-Turnover Relation. *Human Relations*, 35, 845-856.

Steel, R.P. y R.W. Griffeth (1989). The Elusive Relationship Between Estimates of Employment Opportunity and Ensuring Turnover Behavior: A Methodological or Conceptual Artifact?. *Journal of Applied Psychology*, 73, 454-462.

Terborg, J.R. y T.W. Lee (1984). A Predictive Study of Organizational Turnover Rates. *Academy of Management Journal*, 27, 793-810.

Vergin, R.C. (1998). An Examination of Inventory Turnover in the Fortune 500 Industrial Companies. *Production and Inventory Management Journal-First Quarter*, 51-56.

Watson, Wyatt (2000/2001). ECS Survey Report on Employee Efficiency. Data Services.

Werner, S., Brouthers, L.E. y K.D. Brouthers (2000). Perceived Environmental Uncertainty, Entry Mode Choice and Satisfaction with EC-MNC Performance. *British Journal of Management*, 11, 3, 183-195.

Woodward, N. y R. McNabb (1982). The Effect of Recurrent Spells Upon Unemployment Duration. *British Journal of Industrial Relations*, 20, 1, 105-109.

Young, S. y K. Selto (1991). New Manufacturing Practices and Cost Management: A Review of the Literature and Directions for Future Research. *Journal of Accounting Literature*, 10, 265-298.

Youngblood, S.A., Mobley, W.H. y B.M. Meglino (1983). A Longitudinal Analysis of the Turnover Process. *Journal of Applied Psychology*, 68, 3, 507-517.

Zagorski, K. (1990). Regional Differences in Economic Segmentation and Socioeconomic Achievement in Australia. *Research in Social Stratification and Mobility*, 9, 217.

## Appendix

TABLE A1. Sample Participants

|                                     |  |
|-------------------------------------|--|
| <b>DURABLE GOODS MANUFACTURING</b>  |  |
| ALFA Laval Separation               | North American Video Corporation             |
| ANBM-Elgin Plant                    | Norton Manufacturing Organization            |
| Adtran Golf                         | OCE-USA, Inc.                                |
| Adtran, Inc.                        | PGT Industries                               |
| Aisin Automotive                    | Panduit Corporation                          |
| Alcatel USA                         | Philips Consumer Electronics                 |
| Alpha Technologies Group, Inc.      | Rockwell International                       |
| Apex Telecommunications             | Rogers Group, Inc.                           |
| Basler Electric Company             | SDL, Inc.                                    |
| Baxa Corporation                    | Sharp Electronics Corporation                |
| Blount, Inc.                        | Smiths Industries Aerospace                  |
| Brother International               | Sony Electronics, Inc.                       |
| Buck Knives, Inc.                   | Square D Organization                        |
| C M Almy & Sons, Inc.               | Streamfeeder                                 |
| Century Circuits & Electronics      | T D Williamson, Inc.                         |
| Chicago Metallic Corporation        | Thomas Industries, Inc.                      |
| Cornwell Quality Tools Organization | Toko Arnerica, Inc.                          |
| Crown International, Inc.           | Toray Composites America, Inc.               |
| DataColor International             | Turbine Engine Components                    |
| De La Rue Cash Systems, Inc.        | USG Corporation                              |
| Direct Supply, Inc.                 | Videolabs, Inc.                              |
| Donnelly Corporation                | VitalCom, Inc.                               |
| Entegris, Inc.                      | Vitec, Inc.                                  |
| Gradall Company                     | Voith Hydro, Inc.                            |
| H.D. Baurmann, Inc.                 | Volvo Parts North America                    |
| Hayes Lemmerz International         | WA Whitney Company                           |
| Heil Environmental Industry, Ltd.   | White Hydraulic, Inc.                        |
| ICS Advent                          | Wilson Greatbatch Ltd                        |
| Janco Corporation                   | Woodward Governor Organization               |
| Kason Corporation                   | Zebra Technologies Corporation               |
| Litton Industries, Inc.             | <b>NON-DURABLE GOODS MANUFACTURING</b>       |
| Litton Life Support (LLS)           | ABC-CLIO                                     |
| MC Fabrication Industries, Inc.     | Abbott Laboratories                          |
| MagneTek, Inc.                      | Ashtabula Rubber Organization                |
| Malco Products, Inc.                | Aveda Corporation                            |
| Mannington Mills, Inc.              | Basic Vegetable Products                     |
| Manufacturers Services, Ltd.        | CF Industries, Inc.                          |
| Meridian Medical Technologies       | Coca Cola Bottling Organization Consolidated |
| Merit Medical Systems               | Cook Communication Ministries                |
| Mitsubishi Automotive Equipment     | Cryovac Division Sealed Air                  |
| Mizuno USA, Inc.                    | DCP- LOHJA, Inc.                             |
| Molex, Inc.                         | Daiichi Pharmaceutical Corporation           |
| Morphics                            | Delimex                                      |
| NMB (USA), Inc.                     | Faribault Foods, Inc.                        |
| Neoprobe Corporation                | Fox Valley Corporation                       |
|                                     | Gardenburger, Inc.                           |

TABLE A1. Sample Participants (cont.)

|   |                                       |
|---|---------------------------------------|
| Genencor International                  | PPL Corporation                       |
| General Chemical Corporation            | Philadelphia Suburban Corporation     |
| Grande Cheese Organization              | South Jersey Gas Organization         |
| ITW Holographic Specialty Films         | Southwest Gas Corporation             |
| J J Keller & Associates, Inc.           | Texas & New Mexico Power Organization |
| Larex, Inc.                             | Texas Utilities                       |
| Life Way Christian Resources            | Weblink Wireless                      |
| Medical Economics Organization, Inc.    | Williams Organizations                |
| Moore Corporation, Ltd.                 | RETAIL AND WHOLESALE TRADE            |
| MorningStar, Inc.                       | Allied Domecq                         |
| Napp Systems, Inc.                      | Amada America, Inc.                   |
| Nature's Sunshine Products, Inc.        | BJ's Wholesale Club                   |
| Pall Gelman Sciences, Inc.              | Bunzl Distribution USA                |
| Pilot Pen Corporation America           | Coborn's, Inc.                        |
| RR Donnelley & Sons Organization        | Comark, Inc.                          |
| The Record                              | Frazee Industries                     |
| SRD S                                   | Grand Union Organization              |
| Schroeder Milk Organization             | Hannaford Bros. Organization          |
| Star Tribune Organization               | Hartford Fire Equipment               |
| TreeTop, Inc.                           | Harvey Industries                     |
| Tremco, Inc.                            | Home Depot Maintenance Warehouse      |
| Turkey Store Organization               | HomeBase                              |
| UnliSea, Inc.                           | Honey Baked Ham Organization          |
| WD-40 Organization                      | Hydraulic Supply Organization         |
| Western Textile Products                | Hyundai Motor America                 |
| UTILITIES AND ENERGY                    | J Baker, Inc.                         |
| Alliant Energy                          | Kmart Corporation                     |
| Avista Corporation                      | L B Foster Organization               |
| Bangor Hydro-Electric Organization      | L L Bean, Inc.                        |
| California Power Exchange Corporation   | Lanier Worldwide, Inc.                |
| Canton Municipal Utilities              | Master Halco                          |
| Central Iowa Power Cooperative          | Microflex Corporation                 |
| Century Tel, Inc.                       | Office Depot Incorporated             |
| Conectiv                                | Petsmart Direct                       |
| Cox Communications                      | Pleasant Organization                 |
| Duke Energy Corporation                 | Polo Ralph Lauren                     |
| Energy Northwest                        | QVC, Inc.                             |
| Green Mountain Power Corporation        | Reeds Jewelers                        |
| I-Link, Inc.                            | Roots & Fruits Cooperative            |
| Indianapolis Power & Light Organization | RyanHerco                             |
| Kansas City Power & Light Organization  | Sears Roebuck & Organization          |
| Lower Colorado River Authority          | Staples, Inc.                         |
| Minnesota Power                         | Suburban Propane                      |
| New York State Electric & Gas           | Ted Lansing Corporation               |
| OGE Energy Corporation                  | Thrifty White Stores                  |
| Orlando Utilities Commission            | SERVICES                              |

TABLE A1. Sample Participants (cont.)

|  |  |
|--|--|
| A C Nielsen Bases                      | FL Insurance Guaranty Association            |
| AAIM Management Association            | Fairfax County Human Resources               |
| ABS Community Services                 | Farm Credit Council Services                 |
| ACS Government Solutions Group         | Farm Gedit Financial Partners                |
| AKEBONO                                | FedEx Custom Critical                        |
| ANC Rental Corporation                 | FermiLab                                     |
| ARINC, Inc.                            | First Data Corporation                       |
| Adelphia Communications Corporation    | Friendly Ice Cream Corporation               |
| Alaska Airlines                        | Gables Residenhal Trust                      |
| American Academy of Pediatrics         | Gartner Group, Inc.                          |
| American Library Association           | General Growth Properties, Inc.              |
| Armenian Red Cross                     | George School                                |
| American Youth Soccer                  | Goodwill Industries                          |
| Archdiocese of Baltimore               | Graebel Organizations, Inc.                  |
| Asia Foundation                        | Helping Minnesota Cities, Inc.               |
| Automobile Club of Southern California | Hines  |
| Best Western International, Inc.       | Housing Authority of City of Los Angeles     |
| Bob Evans Farms                        | Howard Hughes Medical Institute              |
| Booz Allen & Hamilton, Inc.            | Hyatt Corporation                            |
| Buffets, Inc.                          | I T Group, Inc.                              |
| CB Richard Ellis                       | ITS, Inc.                                    |
| CNA Corporation                        | Innovative Consulting, Inc.                  |
| CNF Service Corporation                | Interparking                                 |
| CareerSite                             | Interpath Communications, Inc.               |
| Carlson Restaurants Worldwide          | Jackson Laboratory                           |
| Center for Creative Leadership         | Jones & Stokes                               |
| Champion Business Systems, Inc.        | KBC Advanced Technologies, Inc.              |
| Chapter 13 Trustee                     | KIKO   |
| City College of Chicago                | Kelly Services, Inc.                         |
| City of Garland                        | Kendle International                         |
| City of Houston                        | Lake County Board of County Commissioners    |
| City of Philadelphia                   | Lerner Corporation                           |
| Columbus Health Department             | Little Six, Inc.                             |
| CommVault Systems                      | Long Term Care Group                         |
| Compuware                              | Los Angeles County Fair Association          |
| Compuwizards Staffing International    | M&I Data Services, Inc.                      |
| County of Morris                       | Maricopa County                              |
| CyLogix, Inc.                          | McGuire Woods Battle & Boothe                |
| DeVry, Inc.                            | Merrill Corporation                          |
| DirecTV                                | Mike Albert Leasing, Inc.                    |
| Drinks.com                             | Missouri Botanical Gardens                   |
| EPIX                                   | Missouri Department of Conservation          |
| Earth Tech, Inc.                       | NEC Systems, Inc.                            |
| Eckerd Youth Alternatives, Inc.        | National Association of Home Builders        |
| Edward Lowe Foundation                 | National Association of Independent Insurers |
| Employers Resource Association         | National Computer Systems, Inc.              |

TABLE A1. Sample Participants (cont.)

|   |   |
|---|---|
| National Parent Teacher Association             | Alterra Healthcare Corporation            |
| Navy MWR Division                               | Altru Health System                       |
| Neumann Homes                                   | American College of Physicians            |
| New England Aquarium                            | Austin Travis County MHMR                 |
| Norcal Waste Systems, Inc.                      | Baptist Health Systems of South Florida   |
| Norfolk Redevelopment & Housing                 | Borgess Medical Center                    |
| Oakland County Road Commission                  | Carrier Clinic                            |
| Orange County Transportation Authority          | Carson - Tahoe Hospital                   |
| Policy Studies                                  | Central CK Medical Center                 |
| Provider Services                               | Central Iowa Health System                |
| Rhode Island Office of Personnel Administration | Children's Medical Center                 |
| RR Donnelley & Sons Organization                | Dakota Heartland Health System            |
| Rhino Records, Inc.                             | Durlwoody Village                         |
| Round Rock City Information                     | Easter Seal Society of North Carolina     |
| SERCO   | Eastern New Mexico Medical Center         |
| Schaumburg Township District Library            | Emergency Medical Services, Inc.          |
| Shooshanian Engineering                         | Episcopal Retirement Homes                |
| Social & Scientific Systems, Inc.               | Express Scripts, Inc.                     |
| Standard Pacific                                | General Health Systems                    |
| Star Systems, Inc.                              | Health Alliance - ABC                     |
| State Corporation Commission                    | Hendrick Health System                    |
| Swanson Russell Associates                      | Horizon House, Inc.                       |
| Technicolor, Inc.                               | JFK Medical Center                        |
| Texas Womans University                         | Jackson Memorial Hospital                 |
| Trans Union Corporation                         | Kennedy Health System                     |
| Tri-Cities Childrens Center                     | Kent Community Campus                     |
| Tropical Shipping/Birdsall UES, Inc.            | Kuakini Health System                     |
| University of Texas Southwestern Medical Center | MAHEC                                     |
| United Way of New York City                     | Memorial Health Systems                   |
| University of Houston                           | Memorial Hospital                         |
| University of Minnesota                         | Memorial Sloan-Kettering Cancer Center    |
| University of Notre Dame                        | Meriter Health Services, Inc.             |
| University of Texas Arlington                   | Mid Michigan Medical Center               |
| University of Virginia                          | Our Lady of Bellefonte Hospital           |
| Utah Transit Authority                          | Providence Community Health Centers, Inc. |
| V S E Corporation                               | Providence Health System                  |
| V-SPAN, Inc.                                    | Redlands Community Hospital               |
| Wackenhut Services, Inc.                        | ScrippsHealth                             |
| Weatherly Wendy's International, Inc.           | Shriners Hospital for Children            |
| Wilder Foundation                               | Shriners Hospital of Houston              |
| Wisconsin Central Limited                       | Sibley Memorial Hospital                  |
| Woodward Communications, Inc.                   | St. Agnes Medical Center                  |
| Worldspan XYAN, Inc.                            | St. Cloud Hospital                        |
| YMCA of Orange County                           | St. Josephs Regional Medical Center       |
| Yellow Technologies                             | St. Mary Hospital                         |
| HEALTH CARE                                     | Staten Island University Hospital         |



TABLE A1. Sample Participants (cont.)

|  |  |
|--|--|
| Suny Health Science Center University Hospital   | Aegon Equity Group – WRL                     |
| U S Oncology Resources                           | American Family Insurance Group              |
| UTA Halee Girls Village                          | American Medical Security                    |
| United HealthCare Corporation                    | Blue Cross & Blue Shield                     |
| University Hospital, Albuquerque, NM             | Blue Cross & Blue Shield of Michigan         |
| University of Wisconsin Medical Foundations      | Blue Cross & Blue Shield of Rhode Island     |
| West Virginia University Medical Corporation     | Blue Cross Blue Shield of Minnesota          |
| WakeMed  | Blue Cross of Idaho                          |
| BANKING AND FINANCE                              | Blue Cross of Northeastern Pennsylvania      |
| Advanta Corporation                              | CUNA Mutual Group                            |
| Alliance Bank NA                                 | Church Pension Fund                          |
| Alternatives Federal Credit Union                | Employee Benefit Claims                      |
| Bank of Communications                           | Employers Reinsurance Corporation            |
| Bank Atlantic                                    | Erie Insurance Group                         |
| Board of Governors of the Federal Reserve System | FBL Financial Group                          |
| California Bank & Trust                          | Farm Bureau Insurance                        |
| Caterpillar Financial Services, Inc.             | Farmers Insurance Group                      |
| Chicago Board of Trade                           | Independence Blue Cross                      |
| Commonwealth General Corporation                 | Insurance Services office, Inc.              |
| Compass Bancshares, Inc.                         | Mercury General Corporation                  |
| Concord EPS                                      | Midland Life Insurance Organization          |
| Federal Home Loan Bank of Boston                 | Mutual of Omaha                              |
| Federal Reserve Bank of Boston                   | Ohio Casualty Group                          |
| Federal Reserve Bank of Atlanta                  | PMA Group                                    |
| Federal Reserve Bank of Chicago                  | Premera Blue Cross                           |
| First National Bank                              | Regence Group                                |
| Florida Central Credit Union                     | Reinsurance Group of America                 |
| GMAC Mortgage Corporation                        | Reliance Standard Life, Insurance Company    |
| Harris Trust & Savings Bank                      | Sentry Insurance a Mutual Organization       |
| Household International                          | Trigon Blue Cross Blue Shield                |
| Irwin Financial Corporation                      | Universal Underwriters Group                 |
| NASD/Nasdaq Northeast Bank                       | Workers Compensation Insurance Rating Bureau |
| Ohio Savings Bank                                |  |
| People's Bank                                    |  |
| Plains Bank of Illinois                          |  |
| Quad City Bank & Trust                           |  |
| Raymond James & Associates                       |  |
| Republic Bank                                    |  |
| Security Service Federal Credit Union            |  |
| Sequoia Bank                                     |  |
| Sikorsky Federal Credit Union                    |  |
| Silicon Valley Bank                              |  |
| Sunstone Financial                               |  |
| Travelers Express Organization, Inc.             |  |
| INSURANCE  |  |
| Accident Fund Organization                       |  |

TABLE A2. Definition of Expenses Ratios

|       |   |   |
|-------|---|---|
| R.1.  | Payroll and Benefits Expenses as a Percent of Manpower Expenses           | $\frac{\text{Payroll Expenses} + \text{Benefits Expenses}}{\text{Payroll Expenses} + \text{Benefits Expenses} + \text{Temporary \& Contract Workers Expenses}}$ |
| R.2.  | Payroll Expenses as a Percent of Manpower Expenses                        | $\frac{\text{Payroll Expenses}}{\text{Payroll Expenses} + \text{Benefits Expenses} + \text{Temporary \& Contract Workers Expenses}}$                            |
| R.3.  | Benefits Expenses as a Percent of Payroll Expenses                        | $\frac{\text{Benefits Expenses}}{\text{Payroll Expenses}}$  |
| R.4.  | Temporary and Contract Worker Expenses as a Percent of Manpower Expenses  | $\frac{\text{Temporary \& Contract Workers Expenses}}{\text{Payroll Expenses} + \text{Benefits Expenses} + \text{Temporary \& Contract Workers Expenses}}$      |
| R.5.  | Benefits Expenses as a Percent of Manpower Expenses                       | $\frac{\text{Benefits Expenses}}{\text{Payroll Expenses} + \text{Benefits Expenses} + \text{Temporary \& Contract Workers Expenses}}$                           |
| R.6.  | Payroll and Benefits Expenses as a Percent of Operating Expenses          | $\frac{\text{Payroll Expenses} + \text{Benefits Expenses}}{\text{Operating Expenses}}$  |
| R.7.  | Payroll Expenses as a Percent of Operating Expenses                       | $\frac{\text{Payroll Expenses}}{\text{Operating Expenses}}$   |
| R.8.  | Temporary and Contract Worker Expenses as a Percent of Operating Expenses | $\frac{\text{Temporary \& Contract Workers Expenses}}{\text{Operating Expenses}}$   |
| R.9.  | Benefits Expenses as a Percent of Operating Expense                       | $\frac{\text{Benefits Expenses}}{\text{Operating Expenses}}$  |
| R.10. | Medical Expenses as a Percent of Benefits Expenses                        | $\frac{\text{Medical Expenses}}{\text{Benefits Expenses}}$  |
| R.11. | Medical Expenses per Covered Employee                                     | $\frac{\text{Medical Expenses}}{\text{Number of Employees Covered Under Medical Expenses}}$   |
| R.12. | Paid Time Off (PTO) Expenses as a Percent of Benefits Expenses            | $\frac{\text{Paid Time Off (PTO) Expenses}}{\text{Benefits Expenses}}$  |
| R.13. | Paid Time Off (PTO) Expenses as a Percent of Payroll Expenses             | $\frac{\text{Paid Time Off (PTO) Expenses}}{\text{Payroll Expenses}}$   |
| R.14. | Manpower Expenses as a Percent of Gross Sales/Revenue                     | $\frac{\text{Payroll Expenses} + \text{Benefits Expenses} + \text{Temporary \& Contract Workers Expenses}}{\text{Gross Sales/Revenue}}$                         |
| R.15. | Payroll Expenses as a Percent of Gross Sales/Revenue                      | $\frac{\text{Payroll Expenses}}{\text{Gross Sales/Revenue}}$  |

TABLE A2. Definition of Expenses Ratios (cont.)

|       |   |  |
|-------|---|--|
| R.16. | Benefits Expenses as a Percent of Gross Sales/Revenue                                 | $\frac{\text{Benefits Expenses}}{\text{Gross Sales/Revenue}}$  |
| R.17. | Gross Sales/Revenue Payroll Expenses as a Percent of Gross Sales/Revenue              | $\frac{\text{Gross Sales/Revenue}}{\text{Total Number of Full-Time Equivalent Employees}}$   |
| R.18. | Payroll and Benefits Expenses per FTE Employee  | $\frac{\text{Payroll Expenses} + \text{Benefits Expenses}}{\text{Total Number of Full-Time Equivalent Employees}}$   |
| R.19. | Manpower Expenses per FTE Employee  | $\frac{\text{Payroll Expenses} + \text{Benefits Expenses} + \text{Temporary \& Contract Workers Expenses}}{\text{Total Number of Full-Time Equivalent Employees}}$ |
| R.20. | Payroll Expenses per FTE Employee   | $\frac{\text{Payroll Expenses}}{\text{Total Number of Full-Time Equivalent Employees}}$  |
| R.21. | Benefits Expenses per FTE Employee  | $\frac{\text{Benefits Expenses}}{\text{Total Number of Full-Time Equivalent Employees}}$   |
| R.22. | Human Resources Function Operating Expenses as a Percent of Manpower Expenses         | $\frac{\text{Human Resources Function Operating Expenses}}{\text{Payroll Expenses} + \text{Benefits Expenses} + \text{Temporary \& Contract Workers Expenses}}$    |
| R.23. | Human Resources Function Operating Expenses per Human Resources Function FTE Employee | $\frac{\text{Human Resources Function Operating Expenses}}{\text{Number of Human Resources Function Full-Time Equivalent Employees}}$                              |
| R.24. | Human Resources Function Operating Expenses per FTE Employee                          | $\frac{\text{Human Resources Function Operating Expenses}}{\text{Total Number of Full-Time Equivalent Employees}}$   |
| R.25. | Human Resources Function Operating Expenses per Employee (Headcount)                  | $\frac{\text{Human Resources Function Operating Expenses}}{\text{Total Number of Employees (Headcount)}}$  |
| R.26. | Training Expenses as a Percent of Manpower Expenses                                   | $\frac{\text{Training Expenses}}{\text{Payroll Expenses} + \text{Benefits Expenses} + \text{Temporary \& Contract Workers Expenses}}$                              |
| R.27. | Training Expenses per Employee (Headcount)  | $\frac{\text{Training Expenses}}{\text{Total Number of Employees (Headcount)}}$  |
| R.28. | Training Expenses per FTE employee  | $\frac{\text{Training Expenses}}{\text{Total Number of Full-Time Equivalent Employees}}$   |
| R.29. | Staffing Expenses as a Percent of Human Resources Function Operating Expenses         | $\frac{\text{Staffing Expenses}}{\text{Human Resources Function Operating Expenses}}$  |
| R.30. | Staffing Expenses per Hire  | $\frac{\text{Staffing Expenses}}{\text{Total Hires}}$  |

TABLE A3. Definition of Staffing Ratios

|       |   |   |
|-------|---|---|
| R.31. | Exempt FTE Employees as a Percent of Total FTE Employees  | $\frac{\text{Number of Exempt Full-Time Equivalent Employees}}{\text{Total Number of Full-Time Employees}}$   |
| R.32. | NonExempt FTE Employees as a Percent of Total FTE Employees   | $\frac{\text{Number of NonExempt Full-Time Equivalent Employees}}{\text{Total Number of Full-Time Employees}}$  |
| R.33. | Total FTE Employees per Human Resources Function FTE Employee   | $\frac{\text{Total Number of Full-Time Equivalent Employees}}{\text{Number of Human Resources Function Full-Time Equivalent Employees}}$                              |
| R.34. | Total Number of Employees (Headcount) per Human Resources Function FTE Employee                         | $\frac{\text{Total Number of Employee (Headcount)}}{\text{Number of Human Resources Function Full-Time Equivalent Employees}}$  |
| R.35. | Exempt FTE Human Resources Function Employees as a Percent of Human Resources Function FTE Employees    | $\frac{\text{Number of Human Resources Function Exempt Full-Time Equivalent Employees}}{\text{Number of Human Resources Function Full-Time Equivalent Employees}}$    |
| R.36. | NonExempt FTE Human Resources Function Employees as a Percent of Human Resources Function FTE Employees | $\frac{\text{Number of Human Resources Function NonExempt Full-Time Equivalent Employees}}{\text{Number of Human Resources Function Full-Time Equivalent Employees}}$ |

TABLE A4. Definition of Turnover Ratios

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|       |   |  |
|-------|---|--|
| R.37. | Number of Hires as a Percent of Total<br>Number of Employees (Headcount)                      | $\frac{\text{Number of Hires}}{\text{Total Number of Employees (Headcount)}}$  |
| R.38. | Number of Separations as a Percent of<br>Total Number of Employees<br>(Headcount)             | $\frac{\text{Number of Total Separations}}{\text{Total Number of Employees (Headcount)}}$  |
| R.39. | Number of Voluntary Separations as a<br>Percent of Total Number of Employees<br>(Headcount)   | $\frac{\text{Number of Voluntary Separations}}{\text{Total Number of Employees (Headcount)}}$                                      |
| R.40. | Number of Involuntary Separations as a<br>Percent of Total Number of Employees<br>(Headcount) | $\frac{\text{Number of Total Separations} - \text{Number of Voluntary Separations}}{\text{Total Number of Employees (Headcount)}}$ |
| R.41. | Number of Voluntary Separations as a<br>Percent of Total Separations                          | $\frac{\text{Number of Voluntary Separations}}{\text{Total Number of Separations}}$  |
| R.42. | Number of Involuntary Separations as a<br>Percent of Total Separations                        | $\frac{\text{Number of Total Separations} - \text{Number of Voluntary Separations}}{\text{Total Number of Separations}}$           |

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## **Documentos de Trabajo**

**Facultad de Ciencias Económicas y Empresariales. Universidad de Zaragoza**

**2002-01:** “Evolution of Spanish Urban Structure During the Twentieth Century”. Luis Lanaspá, Fernando Pueyo y Fernando Sanz. Department of Economic Analysis, University of Zaragoza.

**2002-02:** “Una Nueva Perspectiva en la Medición del Capital Humano”. Gregorio Giménez y Blanca Simón. Departamento de Estructura, Historia Económica y Economía Pública, Universidad de Zaragoza.

**2002-03:** “A Practical Evaluation of Employee Productivity Using a Professional Data Base”. Raquel Ortega. Department of Business, University of Zaragoza.

**2002-04:** “La Información Financiera de las Entidades No Lucrativas: Una Perspectiva Internacional”. Isabel Brusca y Caridad Martí. Departamento de Contabilidad y Finanzas, Universidad de Zaragoza.